

The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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No. 2222.—VOL. XLVIII.

London, Saturday, March 23, 1878.

MR. JAMES H. CROFTS, STOCK AND SHARE BROKER,
AND MINING SHARE DEALER.
No. 1, FINCH LANE, CORNHILL, LONDON, E.C.
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MINES INSPECTED.

BANKERS: CITY BANK, LONDON; SOUTH CORNWALL BANK, ST. AUSTELL.

SPECIAL DEALINGS in the following, or part:—

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50 Chontales, 12s. 6d. 50 I. X. L., 2s. 9d. 10 Richmond, £10.
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20 Devon Cons., 23. 50 Llanrwst, 234. 100 So. Rom. Grav., 2s.
30 East Van, £6. 10 Minera, £12. 25 Tankerville, 234.
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25 Flagstaff, 15s. 20 N. Sea, Kapan, 13s 9d 50 W. Tankerville, 14s.
20 Glyn, 10s. 6d. 25 North Laxey, 4s. 25 ditto Preference, 25s.
20 Glenroy, 17s. 6d. 50 Pandora. 10 W. Chiverton, 21s.
10 G. Laxey, 220%. 50 Penstruthal, 5s. 3d. 20 W. Wye Valley, £31.
25 Halcombe Stock, £35%. 100 Pestarena, 5s. 9d. 25 W. Wye Valley, £2.
50 Parys Mount, 10s.

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ESTABLISHED 1842.

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ESTABLISHED 1867.

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References given and required when necessary.

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50 Blue Tent, 22s 8s. 9d. 50 Hultafall, 29 18s. 9s.
70 Chontales, 12s. 50 Javali, 6s. 9d. 15 Roman Grav., £8 6s 3
20 Condes de Chil. 50 Kapanga, 14s. 6d. 15 Tankerville, £234.
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3 Cape Copper, £32%. 50 Llanrwst. 5 Van, £25 1/2.
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50 Don Pedro, 12s. 50 Marke Valley, 9s. 6d. £2 1s. 3d.
40 East Caradon. 100 New Pacific, 6s. 6d. 20 Wh. Grenville.
10 East Van, £26 1/2. 50 North Laxey, 4s. 50 W. Tankerville, 14s.
25 Everhardt, £6 3s. 6d. 25 New Quebrada, 41s 6d 10 Wye Valley.
90 Exchequer, 3s. 6d. 60 Parys Mount, 9s. 6d. 30 West Ashton, 13s 9d
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Edited by—
ALFRED E. COOKE, 78, OLD BROAD STREET, LONDON.

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Llanrwst, 21 1/2. W. Tankerville, 13s. Port Phillip, 10s. 6d.
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Parys Mountain, 9s. 6d. Wh. Grenville, 23 1/2. Yorke Peninsula, 5s. 3d.

Yorke Peninsula, 5s. 3d.

Carn Brea, 10s. 6d. West Wye Valley, £23 1/2. Yorke Peninsula, 5s. 3d.

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Hington. 8s. 9s. West Wye Valley, £23 1/2. Yorke Peninsula, 5s. 3d.

Last Chance. 14s. 16s. West Wye Valley, £23 1/2. Yorke Peninsula, 5s. 3d.

Ladywell. 17s. 6d. West Wye Valley, £23 1/2. Yorke Peninsula, 5s. 3d.

Leadhills. 3s. 4s. West Wye Valley, £23 1/2. Yorke Peninsula, 5s. 3d.

Marke Valley. 10s. 12s. 6d. West Wye Valley, £23 1/2. Yorke Peninsula, 5s. 3d.

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30 Argentine, £1 1s. 3d. 20 Frontino, 21 1/2s. 6d. 150 Penstruthal, 5s. 6d.

100 Aberdaunant. 30 Flagstaff, 14s. 60 Port Phillip, 11s. 6d.

50 Bodidris. 20 Gorsedd & Merlin, £24

Lectures on Practical Mining in Germany.

CLAUSTHAL MINING SCHOOL NOTES.—No. LXVI.*

BY J. CLARK JEFFERSON, A.R.S.M., W.H. SC.,
Certified Mining Engineer.

(Formerly Student at the Royal Bergakademie, Clausthal).

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SECTION V.

GENERAL PRINCIPLES.—All the varieties of timbering used in mining may be divided into two classes.

1.—Simple or single timbering, which consists of a single piece only, such as a stempel or prop (having at most only an additional piece or two to serve as a cap or lid) placed in such a position as to receive and oppose the pressure in a direct line.

2.—Combined or compound timbering, consisting, as its name signifies, of several pieces joined together, which mutually support each other, and constitute together a definite whole. These separate pieces, which constitute a given form of timbering, may again be divided into two classes, those which form the main portion of the timber, and are intended to support the main pressure, and are, therefore, called the principal timbers; and those which are intended either for keeping the principal timbers in their position, or for distributing the pressure suitably over and among the main timbers, or for filling up the space between the principal timbering and the sides or walls, or for covering up and preventing the falling through of loose strata, all of which we may call accessory timbers.

Although the above definitions are suitable and practicable as regards the use of the timber underground, yet the form in which it is procured is necessarily often different; but the different forms in which the timber is procured are dependent chiefly on the use to which it is to be applied.

The principal form in which timber is procured for mines is round wood, or stem wood—the trunk or stems of trees cut in suitable lengths—and as such is used chiefly for props in coal mines and for staves in metalliferous mines. The diameter varies from 6 in. to 18 in. in most cases; occasionally, as shaft timbering, a diameter of more than 18 in. may be used. In some cases, such as in coal mines, the timber may be bought in definite lengths suited to the thickness of the seam, or in others the trees (pine) are bought in their entirety (except the roots) as sawn, and afterwards cut at the mine to the desired length. The upper tapering end, which may, however, be used in coal mines for brattice props, and in metalliferous mines or in quick ground for—"Abtreibe"—timbering (to be afterwards explained) is very often cut off, and not bought with the other timbering. This thin tapering end of a pine tree, if it be perfectly straight, may be used for ladders in metalliferous mines, though it may in many cases be found the cheapest to buy the ladders ready made, or at least the wood ready sawn. These tapering ends of pine trees, from 4 in. to 6 in. diameter, are often obtained in lengths from 25 ft. to 30 ft. When sawn into laths they are useful for a variety of purposes underground, as railings, ladder sides, covering wood, &c. Except as round or half round timber pine is not often used in mines. According to Burat half round wood was extensively used in the Chamonix Colliery, the flat surface being placed next to the face of the rock, and the round portion turned inwards to the level. When sawn timber is used in the mines leaf wood is generally used for the purpose, the chief object in sawing the timber being to obtain a regular shape, and in the case of oak the removal of the outer wood. For watertight timbering it will be indispensably necessary to use sawn timber, which may even afterwards have to be planed. Planing will always be necessary in the case of wooden conductors, and care should be taken in selecting timber for the latter purpose to see that it is well seasoned, and not liable to warp, and that the pieces contain as few knots as possible. Planed and sawn timbers are chiefly used in shaft timbering, doors and door sets, scaffolding, road planks, sleepers, water dams, &c. A very useful kind of sawn timber is that which is called "Schwarten" by the German miners. They are long pieces of wood, which have been sawn off the outer portion of a stem, and consequently have for section a larger or smaller segment of a circle, and thus have only one sawn surface. The "Schwarten" are useful for a variety of purposes, chiefly as covering or scaffold timber, by "Getriebe" timbering to keep back loose ground or strata, and hence sometimes called "Abtreibe-Schwarten." For this purpose they are specially adapted owing to the smoothness of the round surface, which allows of their being driven forward in loose strata with less friction than timber sawn on all sides. As might be expected, the "Schwarten" are not capable of bearing any great weight of themselves, but more, perhaps, than would at first appear, since they are almost entirely obtained from pine wood, in which the outer portion is stronger and more resinous than the core wood. They usually taper from 4 in. to 2 in. in thickness, and have a width of from 3 in. to 6 in. In cases of great pressure and constant dampness, where the changing of the timber is difficult, the "Schwarten" may be made of oak, on account of its greater strength and durability. For solid timbering they are sometimes made of the same thickness throughout, and even in special cases sawn into rectangular pieces, when they are more properly called "Strassbaume," or "Streichbaume." Such rectangular timbering is used chiefly in cases where two or more pieces shall fit close together. Boards and planks are also used in mines for variety of purposes, such as scaffolding, covering wood for keeping back loose ground, stagings, corves, dams, shaft timbering, &c., varying in thickness from 4 in. downwards.

In many of the German mines the erection of timber underground is placed in the hands of a special workman, or underground timberman. In metalliferous mines, perhaps more than in coal mines, is such a course advisable, since the combinations and variety in the timbering which occur underground require more than a mere superficial knowledge or skill as carpenter. Such a person requires special experience and skill; he should not only be handy at his own work as a carpenter, but, as in almost all cases a preparatory dressing of the rock, or cutting out to a suitable size and form of the place for the timbering is necessary, he should be able to handle a miner's tool. Besides this he should have had sufficient experience underground to readily appreciate in all cases the direction in which the pressure exerts itself, and to decide at once upon the best form of timbering for the purpose. With this will often be required coolness and nerve, as many cases will occur in which a little timely aid in the shape of props and struts will make an otherwise dangerous place safe to work in, and in which an ordinary inexperienced (with respect to underground work) carpenter would be so frightened that either he would shirk putting up the timber at all, or do it in such a hasty manner that it would be perfectly useless for the work. In the ordinary working of mines, however, cases will often happen in which it is necessary that the timbering be put up at once, without admitting of the delay necessary to fetch the regularly appointed timberman. Such an instance will repeatedly occur in the working faces in coal mines, when the collier himself, by a few well-placed props and lids can make the working place secure, which would otherwise in half an hour become completely closed up, owing to the fall of the roof. In many coal mines the timbering of the working face, and the borrowing or robbing of the back timber, falls upon the colliers themselves, in others the borrowing of the timber at least is the work of specially appointed workmen. The robbing of back timber and the replacing of old rotten or broken timber are, perhaps, the most dangerous of mining operations, and on that account alone should be performed only by

specially trained and experienced workmen. The saving of expense by leaving the borrowing of the timber to the colliers is doubtful, since there is little or no inducement to a collier to recover back timber, which takes up more of his time than the setting of a new prop, besides to an inexperienced man being somewhat dangerous. The cost for timber is a heavy item in most collieries, and there can be no doubt but some saving in this would be obtained were the recovery of back timber, &c., placed in the hands of special workmen, who might be required to keep some account of fresh timber sent down the pit, and that lost in the goaves, or broken by not being withdrawn in time. In metalliferous mines the timbering is usually a more complex affair than in collieries, and requires to be carried out with more care and exactitude; the timber itself requires to be fitted better in position, and remains longer. The carpenter of a metalliferous mine, therefore, requires more skill and variety of experience, and the fixing of a set of timbering will require more time. For coal mines the surface work alone will require a carpenter's shop at the top, and it is usual here to cut and prepare the timber to size and shape before sending it down the pit. Such a surface carpenter is advisable in the case of all metalliferous mines which have sufficient employment for one; and before cutting and preparing the timbering he himself should go underground and measure the requisite dimensions, since any later preparing or fitting of the timber in the mine is much more inconvenient and expensive than at the surface, and such a course is cheaper than if it were necessary every time for the underground timbers to come to the surface and cut and prepare their own timbering, and besides in many cases will also effect a saving of time. When not so employed he might be engaged in sawing and getting ready timber for general uses and stores, such as the cutting of props and sprags of the most usual lengths, sleepers, cork timber, stumps, planks, and the like. The employment of such a surface carpenter is usual not only in collieries but in many of the Prussian metalliferous mines. In many cases the timbering work, both underground and at the surface, can be given out as piece-work; and it is advisable to do so, except in cases where there is any great liability of the quality and soundness of the work suffering from such a course. As such may be cited the fixing of door sets, scaffolding, stumps, shaft timbering, &c.; where, however, the work is one which occurs but rarely, and under varying conditions and dimensions, it will be difficult to fix upon a price, and such will be best carried out by day-wage under supervision. In the case of extensive mines it may even be advisable to appoint a foreman carpenter, or timberman, whose sole work shall be the oversight and charge of all timbering at the surface and underground, on whom would then devolve the responsibility of examining the timbering, and seeing that it was properly and satisfactorily carried out by the carpenters, and the decision as to the necessity of replacing old timbering, and the most suitable form of timbering under the momentary conditions and requirements. Some of the German mines have two such foremen carpenters, one for the surface and one for underground.

The principal tools used by a pit carpenter are the following:—The hatchet, or axe, which is found in a variety of forms, according to the locality, is perhaps the most important tool belonging to the mine carpenter, and is usually carried by continental miners stuck in the belt. The difference between an axe and a hatchet is not well defined. According to many Prussian miners an axe has the cutting edge tapering on both sides, whilst in the hatchet one side only of the blade is perfectly flat, the other being ground to make a cutting edge. According to this a blow with the hatchet requires to be struck only in the plane in which the face is to be cut, whilst an axe will require holding somewhat obliquely whilst the blow is being struck. In England an axe is often distinguished from a hatchet, inasmuch that in the latter the cutting edge is formed by grinding a bevel edge at the end of the blade, whilst in the former the edge is not bevelled, but tapers gradually to the cutting edge. The blade of an ordinary rectangular axe or hatchet is about 6 to 8 in. long and 3 in. deep; the head weighs from 2 to 8 lbs. The length of the handle varies considerably, according to local requirements—14 to 24 in. being very common limits. Where the timbering is heavy and there is plenty of room, the handle may be as much as 30 to 36 in. long, as in the Hartz Mines. The back of the eye or poll is sometimes faced with steel, and then is often used in the place of a hammer. At Altenberg in Saxony, the back of the eye is prolonged as a hammer head, the tool being used as a hammer for driving the "Schwarten" when driving in loose ground. Many axes or hatchets have the cutting edge broader than the rest of the blade, which is often curved instead of being straight. When very broad it is called the broad hatchet. In Westphalia the broad hatchet has the handle fixed in it somewhat inclined to the plane of the blade. Many hatchets which have a perfectly straight edge and a uniform depth of the blade are furnished at the inside edge with a small nick or slot, which makes it thus a very handy tool for extracting nails and the like; others have a short piece forming two claws welded or attached to the poll or back of the axe for the same purpose. The cutting edge of the axe or hatchet is ground at an angle varying from 20° to 30°. According to Sickel, the use of a hacking pick was very frequent formerly at the Spanish mines. This consists of a belly-shaped knife or blade, the handle of which is made of iron, and forms a long loop, being welded to the knife blade, the loop of the handle being sufficiently large for the insertion of the hand. The most usual tool amongst the Spanish mine carpenters is the so-called "azuela," consisting of a broad plate about 8 centm. wide and 12 centm. high, the lower portion forming the cutting edge the upper end being prolonged in a tongue piece. This tongue piece has a slight indentation, in which a rectangular iron hoop fits; the hoop embracing the tongue piece and a strong wooden handle, which abuts against the tongue piece, being curved sharply downwards at the back end. This instrument, notwithstanding the apparent want of rigid connection between the blade and the handle, is said to be an extremely useful instrument either for use at the surface or underground. The compactness and lightness of the instrument are, doubtless, its two chief advantages.

The blade of a hatchet is usually formed by doubling a flat piece of iron over a steel-plate, and welding them together, so that when the hatchet blade is ground on both sides to form the cutting edge the iron is ground away on both sides, leaving the steel plate projecting sufficiently to form the cutting edge. In many cases the blade of a hatchet is symmetrical in shape; in others the main part of the blade may be within a perpendicular to the handle through the middle of the eye (i.e., projects towards the handle), and hence called the inlying axe heads, whilst in others the main parts of the blade lie without the perpendicular to the handle through the middle of the eye, and hence called outlying axe heads. The inlying axe heads appear most suitable where the radius in which the axe is swung is comparatively short; whilst in the case of outlying axe heads the effective radius is increased. As in the case of all sharp-edged tools the degree of sharpness depends mostly upon the greater or less hardness of the wood to be cut. A hard wood requires a more obtuse angle between the two faces of the cutting edge, generally varying between 20° and 30°. The weight of the blade varies between 3 lbs. and 7 lbs. The ordinary form of axe presupposes that the face of wood to be cut is in a vertical plane. This, although the most favourable position for an effectual blow, is suited chiefly for cases where chopping is the principal object; where, however, it is of importance to have a smooth and plane face this is best accomplished by the horizontal underhand swinging motion of the adze, in which the cutting edge is more readily preserved in one plane than in the case of the movement of the blade of the axe in a vertical plane.

which the coal dust passes in five minutes; he hopes to have the prepared fuel in the market in the course of a few weeks. The lumps are subsequently waterproofed.

THE GREAT EXHIBITION IN PARIS.

IMPROVEMENTS IN CROSSING THE CHANNEL.

The Channel passage has so long been the dread of Cockney tourists and to Frenchmen, almost without exception, that the interchange of visits of pleasure and even commercial intercourse have been much restricted; but there appears to be no longer any doubt that a complete remedy has been found—that sea sickness need no longer be feared by the most invertebrate landsman during a sea passage which will occupy no longer time, and cause no more disturbance to the most sensitive stomach, than a trip from London to Woolwich and back again. The official trial of the Channel Steamship Company's twin paddle steamer Express, built by Messrs. A. Leslie and Co., of Hebburn, and which it is intended to run between Dover and Calais, was made on Saturday, and the success was so complete that dissatisfaction was impossible, and when the details of the improvements are considered the most surprising feature appears to be that such vessels as the Express have not long ere this come into general use for the Channel traffic. The great advantage of all vessels of the Castalia and Express character is that the beam is so greatly increased that they ride like a raft, whilst their size enables them to sit on two waves simultaneously, and prevents their becoming too lively. The problem to be solved has been when central paddles have been used to keep them well in the water, as when rotating in a trough between two waves they, of course, do nothing to propel the vessel, and thus obtain a maximum speed.

The Castalia, which was designed by Capt. Dicey, the originator of the Channel Steamship Company, was built by the Thames Shipbuilding Company, and was of a very novel construction. Capt. Dicey took an ordinary steamer, and cutting the hull in two connected the two halves together by building over them a large oblong superstructure, in which was placed the whole of the passenger accommodation. Under this superstructure were placed the paddle wheels by which the steamer was propelled. As is now pretty well known, both the Castalia and the Bessemer, tried about the same time, proved unsuccessful and unprofitable to their respective owners, and in the case of the Castalia the failure lay in the want of sufficient speed. The passengers by her missed their trains, and were thrown into the extra expense and inconvenience of staying overnight at Dover and Calais. So great, however, were the advantages in the accommodation of the saloons and cabins in Capt. Dicey's ship that, notwithstanding the slowness of her rate of speed, many passengers preferred to risk the Channel passage in her rather than suffer the pitching and rolling of the more swift steamers. Convinced of the superior benefits of the twin-ship principle for Channel passage, provided the desired speed could be attained, the company determined to try once more, and enlisted the services of Mr. Andrew Leslie, of Hebburn, who at once set about gathering data from the results of the running of the Castalia, and conducted, with the assistance of Mr. Wm. Parker, chief engineer's surveyor of Lloyds, a number of experiments. Among other trials he had two of the ordinary Woolwich steamers lashed together, and as the result he came to the conclusion that he could so improve upon Capt. Dicey's plans as to enable his firm to turn out a steamer that would meet all the requirements of the Channel passage, which was that the draft of water should not exceed 7 ft., and that the minimum speed should be 14 knots per hour. The great difficulty to be overcome was, of course, to get sufficient power of engines in the boat so as not to immerse her too deeply in the water; and this difficulty has been entirely removed at Hebburn, for the Express draws about 1 ft. less water than the Castalia, though she is 10 ft. longer, and about 1 ft. broader. The two hulls are about 1 ft. wider than in the Castalia, and the channel between the two vessels is about 2 ft. narrower.

The leading feature of difference between the Castalia and the Express lies in the construction of the hulls, inasmuch as whereas the former is two half ships—the insides being flat, and the outsides elliptical, as in ordinary steamers—placed a certain distance apart, and giving a parallel channel between, the Express is made up of two complete ships, each having symmetrical sides, thus making the channel wider at the ends of the vessels, and narrower where the paddle-wheels work. This had the effect of giving a plentiful supply of water to the wheels, and enabling them to utilise a much greater proportion of power than in the case of the parallel channel. The length of the Express is 300 ft. overall; breadth of beam, 61 ft.; do. extreme over sponsons, 63 ft. 6 in.; depth of hulls moulded, 14 ft. 6 in.; height of superstructure, 8 ft.; length, about 200 ft.; width of each, 18 ft. 3 in.; clear width between hulls, 25 ft. 6 in.; draft of water, complete, with 90 tons of coal in her, 6 ft. 7 in. forward, and 6 ft. 8 in. aft. Another difficulty to be contended against in the construction was to unite the two hulls so completely and rigidly together that combined they might withstand and sustain the shocks and strains which they were sure to encounter in the rough seas of the English Channel. This was achieved by means of four transverse iron girder bulkheads, which entirely span over the channel between the two vessels and enter into the construction of the hulls from the keels to the upper decks. These girders are made upon the same principle as that upon which railway bridges are constructed, and are so arranged that the partitions and decorations of the saloons on deck completely conceal them from view. The great amount of solidity given to the united vessels by this ingenious contrivance is fully manifest in the easy motion of the vessel, and the vibration, so common in large vessels being propelled by engines working at over 4000-horse power, is not so great as might be expected. Another novel feature in the Express is to be found in the rudders. Of these there are four in the complete steamer—one at each end of each hull, the Express being made with both ends alike, so that she can steam either ahead or astern, and so enter her stations without having to turn round. Each rudder is so constructed as to form part of the bow of the ship—narrow at the outer end, and wider at the inner end—and so adds to the buoyancy of the whole, at the same time offering the least possible resistance to the speed of the vessel. The rudders work upon a centre pin, and when not in use are securely locked into a line with the bows by means of strong bolts which are raised or lowered from the working decks by means of cranks. The passenger accommodation is all situated in the huge superstructure which binds the two hulls together. The general saloon, which is situated in the fore end of the vessel, and occupies the whole width of the superstructure, is a handsomely furnished and spacious apartment. The walls are round, and are lined with beautiful white marble let in panels between circular pillars of the same material. The cold grey of the marble is relieved by rich and elaborate gold decorations in relief, while the columns are topped with a gold gilt cap of Corinthian design. The seats and cushions round the saloon are done in deep crimson plush velvet, which impart a warmth and gaiety to the general aspect of the saloon. All round the saloon are ranged windows, from which the passengers can easily look out upon the scenery beyond. Behind the general saloon is situated a room set apart for the exclusive use of ladies, and is fitted up with the same view to comfort. These saloons are approached by separate sets of circular stairs from the upper deck. At the further end of the superstructure are the refreshment saloon and a number of private cabins for the use of families and such persons as desire to enjoy their trip between the two countries in privacy. These are also entered by means of distinct stairs from the upper deck, the tops of the stairs in these and the other saloons being sheltered by a large round house, with glass panels, and wherein a comfortable lounge may be had. The refreshment room is comfortably furnished with seats and lounges, covered with brilliant chintz, and at one end are placed a large bar window and steward's pantry, along with all the necessary conveniences. Each saloon is furnished with handsome mirrors, and attached to each are the usual lavatories and other conveniences. There is accommodation for over a thousand passengers. The engine space is situated in the centre of the deck, between the two sets of saloons, and each engine-room is approached from the deck by either side. As the working of the engines is likely to afford some interest to the passengers, a gallery has been arranged round each room, one as a gen-

* Being Notes on a Course of Lectures on Mining, delivered by Herr Bergrath, Dr. von Grönbeck, Director of the Royal Bergakademie, Clausthal, The Harz, North Germany.

† The writer is compelled in many cases to retain the German names, owing to want of corresponding generally used English names. The term "string piece," which corresponds to the German "Strassebaume" has a much more limited meaning than the latter.

ral promenade, where gentlemen may indulge in the luxury of a smoke, and the other for the exclusive use of ladies.

But in all matters of this kind the propelling arrangements are of infinitely more importance than the fittings and decorations; and in the case of the Express every care has been taken that the fine lines of the twin hulls shall be utilised to the utmost. The engines, which were erected by Messrs. Black, Hawthorn, and Co., of Gateshead, are constructed upon the diagonal inclined principle, with two cylinders in each half of the steamer, each pair working upon one crank pin. The cylinders are each 63 in. in diameter, and the strokes of the pistons are 6 ft., and they travel at the rate of 480 ft. per minute. The engines, while making 40 revolutions per minute, have indicated no less than 4200 horse power; the engine frames are built solid into the vessel, and guiding bars form a tie between the cylinders and the main shaft; all the engine frames are of wrought-iron, with the exception of the carriages, which are of cast-iron. In order to obtain lightness, combined with strength, a great many of the working parts are forged solid, the weigh bars for working the slides having the levers forged upon them. The cross heads and motion blocks are entirely of wrought-iron and gun metal, and the piston-rods and all the principal working parts are of steel. Each cylinder is complete, having its own condenser, air pump, and feed and bilge pumps. The engines are reversed by means of a small steam cylinder, and there is also a small steam cylinder for the opening and shutting of the main stop-valve of each cylinder. The whole of the gear and pumps are worked from a small shaft in order that the weight might be minimised as much as possible, and the end of the shaft is held by a bracket made of cast-steel. The paddle wheels, which are disconnected, and work perfectly independent of each other—it being competent for one to be working ahead while the other is backing—are furnished with large patent feathering floats. The extreme diameter of each wheel is 24 ft.; the wheels have each 10 floats, measuring singly 10 ft. 6 in. in length, and 4 ft. 9 in. in depth. Every float is bound with strong iron, and strengthened by several iron bands. A large wrought-iron beam between the paddle wheels carries the gear for working the floats. The steam is obtained from four boilers, each of which is 15 ft. diameter and 19 ft. long; each boiler is fired from both ends by means of six furnaces, the total number of furnaces being 24, with eight stoke holes. The furnaces are each 3 ft. 10 in. in diameter and 7 ft. 6 in. in length; the furnaces have an area of grates of 650 square feet, and of heating surface of 1350 square feet. The heaviest castings in connection with the engines were the cylinders, which weighed 11 tons each, and were cast by Mr. William Black, North-Eastern Foundry, South Shields. The boilers have a working pressure of 30 lbs. to the square inch, which is fully maintained when the engines are running at full speed, or 40 revolutions per minute, the consumption of coal being at the same time at the rate of 6 tons per hour. Each boiler is furnished with a donkey engine, the whole of the donkeys being connected, so that if there is steam in one boiler any of the others can be filled from it. The steam dome is placed on the top of each boiler. There are four chimneys, oval in shape, and measuring 9 ft. by 4 ft. 6 in. sectionally. Upon the saloon decks, amidships, is a raised deck, a sort of enlarged bridge, upon which is situated the steering apparatus and the compasses. The express is steered by Mr. Brotherhood's patent steam steering gear, supplied by Messrs. Brotherhood and Hardingham, of London. The apparatus is very ingenious, and is worked by means of a small steering wheel, which one man can manage with as much ease as if it were only a small sculler boat he had to guide. It may be added that the Express is fitted with patent windlasses and winches, worked by steam power, and has provided four lifeboats. The whole of the upper surface of the superstructure is reserved for passengers, and the lower deck at the ends of the vessel, and the narrow strip at the sides is reserved exclusively for the sailors to navigate the steamer. There are no holds in the hulls of the vessel save the space necessary to carry the bunker coals.

In the trial on Saturday the results obtained were all that could be desired. As soon as she had got out of the Tyne into the open sea the tugs were cast off, and the engines set away at full speed for a run over the measured mile. When fairly under way at full speed, the Express soon proved herself to be not only an easy-going sea boat, but also a swift traveller. There was a ground swell running on the coast which gave a perceptible motion to the vessel, but the movement was at once easy and free from any unpleasant heaving, so often felt in boats of ordinary build, while she was free entirely from any pitching. The engines, though at full pressure, indicating nearly 4200 horse-power, worked with perfect smoothness and regularity, testifying to the carefulness of their construction, and the high finish given to them. After four hours over the measured mile between Whitley and Hartley—which showed a mean speed of over 14 knots—the steamer was taken for a straight run northwards as far as the Coquet Island, with the view of testing what rate of speed would be occupied in the run home to the Tyne, so as to form an opinion as to the time that would be consumed in the passage of the English Channel. The distance from the Coquet to the Tyne is 22½ miles, whereas that between Dover and Calais is 21 miles. The run southward was in the highest degree satisfactory and successful, the Express running smoothly along, exhibiting excellent steering capacities, and cutting through the water cleanly. The time occupied in the run home was 1 hour 21 minutes, which gave a mean speed of 14½ knots, which is equal to 16½ miles. The comparative value of this result may be judged when the average run across the Channel is 90 minutes, and the quickest run that has been made is 80 minutes. From this it will be seen that the Express on Saturday achieved a greater distance by 1½ mile in only a minute longer than the shortest time by the ordinary Channel steamers. It is confidently anticipated that when in regular work across the Channel a speed of 16½ knots per hour will be attained, so that the sea passage will be made in very little over the hour.

THE MANUFACTURE OF STEEL.

Mr. JAMES RILEY, of the Landore (Siemens') Steel Works, gave a lecture at the Bristol Trade and Mining School, on Monday, on the Manufacture of Steel. Mr. W. PROCTOR BAKER took the chair, and in introducing the lecturer said those of them who were fortunate enough to have been present at the last monthly lecture by Mr. Colquhoun (reported in the *Mining Journal* of Feb. 23 and March 2) would recollect that they had the manufacture of pig-iron under their consideration, and what great stress the lecturer laid upon the manufacture of steel in South Wales in the future, and said that she must rely on that manufacture for the future, as her days for iron were gone by. Here in Bristol, therefore, anything connected with the manufacture of steel must be of the highest importance. (Applause.) Mr. Riley then proceeded with his lecture, and at the commencement said the history of steel was one of great and increasing interest, whether they considered the various processes by which it was produced, the inventors of those processes, or the vicissitudes of fortune through which they had passed up to the present time. Steel, he said, being an alloy of iron and carbon, the aim of the manufacturer was to obtain the alloy with such proportions of each as shall be best fit for the purpose for which it was intended. The lecturer then passed on to describe minutely and in a highly interesting and instructive manner the different processes, past and present, by which steel was produced. He said, before the extensive adoption of the Bessemer and Siemens-Martin process steel was a very costly material to purchase, and was produced in comparatively small quantities for special purposes, which were restricted within very narrow limits. Now there were works in this kingdom alone equal to a production of something like 700,000 tons of Bessemer and 250,000 tons of Siemens steel per annum, whilst the use of the products of these processes were becoming every day more and more extensive and varied. The railways of the world were now largely made of these metals, as were also large portions of the engines, carriages, and wagons which run upon them. The same might be said of the vessels of the Royal and merchant navies, the engines by which they were propelled, and the boilers in which steam is generated for them. Not only in the art of peace did they find the use of steel largely and rapidly extending, but also in that of war; for not only were rifles made of it, but in the guns of heavy calibre, the shells to be fired from them, the carriages on which they

were placed, the racers or railways on which they were mounted and trained, and even the armour-plates of vessels at which they may be fired, steel was now rapidly taking the place of iron. If, then, it was interesting to them to know something of the older and more limited methods by which steel had been and was still produced, how much more important was it that they should have that knowledge regarding the more modern and extensive processes? Mr. Riley then described the Bessemer and Siemens-Martin processes, and concluded by indicating some of the effects of the foreign substances which the steel manufacturer had to contend with in the product of steel, and said manganese was looked upon as a very useful metal as an alloy to help him over his difficulty, and chromium had lately been mentioned as imparting useful qualities to steel. His experience taught him that steel, with (say) 0·2 of chromium, made very good cutting tools, but beyond that he could say very little of the properties of the steel in which it was found. At the end of his lecture Mr. Riley was accorded a hearty vote of thanks. [We shall take an early opportunity of publishing a lengthy abstract of Mr. Riley's paper on the Manufacture of Steel in the *Journal*.]

THE UTILISATION OF HEAT AND OTHER NATURAL FORCES.—Dr. Siemens, C.E., F.R.S., in a lecture at the Glasgow Science Association, explained our sources of heat and force, and pointed out that our coal supply must become exhausted, not indeed in our lifetime but in that of some of those who succeed us. It behoved us, therefore, to consider what we would have to fall back upon. For all practical purposes we depended upon the solar ray, past and present, but the sun was not our sole source of energy, as the tidal wave represented a vast available amount of energy. Passing on to allude to the attempts made to utilise heat, &c., Dr. Siemens showed that the best steam-engines now constructed were capable of realising 2·9ths of the heat generated in the combustion of fuel under the boiler, whilst the remaining 7·9ths formed the margin for future improvement—a large margin, it must be owned, and one that could be dealt with only by increasing the range of temperatures, the most perfect engine being one in which the temperature ranged from that produced in combustion, say 3000 Fahrenheit, to the minimum temperature producible in a condenser. In the consumption of fuel in smelting and reheating metals and other substances there was also much room for improvement, and ultimate economical results could only be looked for when the several operations now employed were replaced by a direct or single process of conversion. The utilisation of the tidal wave would be both costly and restricted in its application. But there was also available the energy derivable from the solar ray from day to day, and the natural effects of these rays—such as rain, wind, and storms—had not yet been utilised, except to a very small extent; and it seemed not improbable that these natural forces would yet again be resorted to simply on account of their comparative cheapness and convenience of application. In order to utilise these national forces at distant towns and centres of industry the electric current might be resorted to. By means of experiments the lecturer showed that the amount of mechanical force recoverable from a dynamo-electric machine was equal, or nearly equal, to one-half the force expended in the original production of the electrical current; and he also illustrated by experiments the great illuminating and heat-generating power of the electrical conductor. There were, he stated, many other ways of utilising solar energy.

CAGES OF COLLERY HOISTS.—The invention of Messrs. WOLSTENHOLME and WOODWARD, of Radcliffe Bridge, Lancashire, consists in an improved apparatus for arresting the descent of the cage when the lifting rope breaks, and it is applicable to those hoists in which wire-ropes are used as conductors instead of the ordinary wood guides. The improved apparatus consists of a pair of steel grips with teeth fitting in boxes on each side of the wire guide ropes; these grips are hinged to links connected below to levers fixed on short shafts passing through the ends of the cage; to these shafts are also fixed levers connected to the side bolts, to which the lifting rope is connected. When the cage is suspended to the lifting rope, the side bolts and levers draw the grips asunder and clear of the wire guide ropes; but when the lifting rope breaks the side bolts drop by their own gravity, and the grips are instantly bound against the wire guide ropes by springs acting on the levers above referred to. The invention is applicable to colliery hoists, and to other hoists in which a movable cage with wire conductors is used.

THE ECONOMY OF RED CHARCOAL.

During the past quarter of a century the use of semi-burned charcoal, or red charcoal, has been extensively used in Belgium, France, and parts of Germany, and its economy as compared with fully charred coal has been thoroughly established. There is now a probability of its becoming known in England and America, an interesting paper on the "Economy Effectuated by the Use of Red Charcoal" having been read by Mr. BERNARD FERNOW, late member of the Forestry Department of Prussia, at the recent meeting of the American Institute of Mining Engineers. Until the researches of Sauvage, known to the ancients long before Christ, and practiced in all countries, having remained almost entirely without modification.

The experiments made by Sauvage showed that a perfectly charred coal does not give the largest quantity of combustible matter in the smallest volume, but on the contrary, that this relative quantity increases to a certain point of the process, and then begins to decrease. He found that at the end of 5½ hours he had attained the greatest yield of combustible matter, that the water and acetic acid are evaporated, and that the product is an imperfectly charred coal of a dark red or brown colour, whence the names charbon roux and rothkohls. Practically, 100 kilos. of air-dried wood may be said to contain 40 kilos. of carbon, 40 kilos. of water chemically combined, and 20 kilos. of hygroscopic. Computing the centigrade heat unit of carbon at 8080, and deducting for the evaporation of 60 per cent. of water 32,400 heat units this compound of combustible matter will be found to contain 290,800 effective heat units. From this there can be got, if hard wood be treated in an oven, from the charcoal—20 kilos., at 7640 heat units, 198,640; tar, 7 kilos., at 4547 heat units, 31,829; and from concentrated acetic acid 2½ kilos., at 3213 heat units, 8003; together, 238,472 heat units. Therefore, to make up the original 290,800 heat units the difference, 50,328 heat units, must be reckoned as lost in the gases during the process. In the production of red charcoal this last amount is retained, and the acetic acid is removed, so that 40 per cent. of combustible matter which accompanies the customary methods of charcoal burning over 30 per cent. are saved, and made available as heat-producing material since the red charcoal affords—from the charcoal, 198,640 heat units; from the tar, 31,829 heat units; and from the combustible gases, 50,328 heat units: together, 280,797 heat units. In other words, the red charcoal retains 96·56 per cent. of the heating value of the wood, whilst the ordinary charcoal represents only 69·00 per cent. since the value of the gases lost is equal to 17·24 per cent. of the raw material, representing one-fourth of the value of the charcoal, and to this must be added the heating value of the tar gases, 10·345 per cent. of the raw material, or 15 per cent. of the charcoal.

That it is more profitable to preserve this heating capacity in the fuel itself than to conduct the charring so as to waste and injure the fuel in order to obtain the gaseous products for other purposes, experience has proved in most parts of Germany, and would be still more apparent where, from the absence of good roads, the transportation of cheap products would consume all the profits. The weight of the fuel, on the contrary (it being more solid than common charcoal), increases over 30 per cent. by gaining over 30 per cent. heating power, and there is a gain of nearly 10 per cent. in material which, in the transportation of the more friable common charcoal, is lost as dust. This gain is made, moreover, without any extra expense except in the first cost of the plant. It appears that some of the charcoal furnaces at Lake Superior employ coal not completely charred, and obtain unusually good economy of fuel. Perhaps it will be found that they have stumbled upon an imperfect charbon roux, and that by its more systematic use they could achieve

still better results. Another fact which points in the same direction is the common practice at American charcoal furnaces of throwing in at the tunnel head not merely half-burned brands but wood. It is probable that the latter becomes red charcoal before reaching the tuyeres, but the economy of performing the charring in the furnace may be doubted for several reasons.

In the discussion which followed the reading of the paper the President remarked that he had seen wood charged in Canada with charcoal blast furnaces to the extent of half the fuel, and referred to figures which had been brought before the Institute some 10 years ago, showing that this practice secured increased economy. An enquiry was made by Mr. W. C. Kent as to whether the retention of the tar and other hydrocarbons would not make the fuel analogous to bituminous coal. Mr. Raymond considered the favourable experience at Lake Superior removed any doubts on that subject. Altogether the manufacture of red charcoal seems likely to attract considerable attention from the commercial as well as from the public advantages offered.

FOREIGN MINING AND METALLURGY.

The chief feature of the Belgian coal trade is its extreme quietness. In default of active sales the various coalowners' associations are occupying themselves with questions of high interest, as well as with the consideration of the reforms which it may be desirable to introduce in various departments of the Government. Thus a meeting, presided over by M. Hardy (Chairman of the Coalowners' Association of the Couchant-de-Mons), and at which all the coal basins of Belgium were represented, urged the establishment in Belgium of a special Ministry of Commerce and Industry. In support of this proposition it was argued that everything was now in a very chaotic condition from an administrative point of view in Belgium. Thus questions relating to agriculture and industry were now dealt with at the Department of the Interior; one had to go to the Ministry of Foreign Affairs in dealing with matters relating to both internal and external commerce, while mines were dealt with at the Ministry of Public Works, together with railway and naval matters.

The question of the improvement of navigable communications, and also the question of canals, continue to occupy a good deal of public attention in France. Canals have been proposed from the Oise to the Seine, via the valley of Montmorency, from Boulogne to St. Omer, and from the Seine to the Mayenne; this latter canal would improve communication with the industrial valleys of the Seine-Inférieure. It is further proposed to extend the canal from the Nord to Rouen as far as Toncarville by means of a canal lateral to the Seine. Various other canal works have also been proposed, but nothing authoritatively definite has yet been determined upon with respect to them. The object which industrials have in view in discussing the navigation question is of course to check foreign competition, which sometimes proves successful in France from the absence in some localities of easy means of moving coal from point to point. As regards the French coal trade, it may be said to have become more quiet than ever, while there is scarcely anything to report with respect to it.

There has been rather more doing at the Belgian works during the last few days. Orders have come forward more freely, while pig maintains itself with firmness. Upon the whole, there has been an evident improvement, but the question of course is—"Will this improvement be maintained?" It is possible, of course, that the improvement is that which sets in every year with the advent of spring, when work is resumed in connection with railways, bridges, and private houses. The Acoz Forges Company has resumed the manufacture of girders which it abandoned about a year since at Chatelineau rolling mill; the number of puddling-furnaces in operation at the company's works is now 25, while the number of re-heating furnaces at work is 7. It had been expected that the Rodange Works would be brought into activity by April 1, but it appears that the date for re-lighting has not yet been definitely fixed. It appears that the abandonment of steam traction on the South Parisian tramways is attributable more to an absence of a satisfactory understanding between the company and its general contractor than to any other reason. Both in France and Belgium considerable attention is still being devoted to the development of steam traction on tramways. With this object it may be incidentally mentioned that a small locomotive with a vertical boiler is being constructed at Liège by M. Tilken-Mention.

In the French iron trade industrials appear to be rather more satisfied than hitherto. At Paris especially sales have been resumed with some activity. Paris remains the great consuming centre *par excellence*, and building operations are now being prosecuted with considerable activity. All special iron for building purposes now finds ready sale upon the Paris market. The Maubenghe Forges Company have contracted to supply the Northern of France Railway Company with 80 turntables for 5342. The Marquise Company has also contracted to supply 80 turntables to the Northern of France Railway; the contract price in this case is 5393. It is reported that M. Gustave Dumont, forgemaster at Maubenghe, proposes to establish a rolling mill for plates; the question, however, appears to be only under M. Dumont's consideration. Two large armour plates were made last week at Creusot for Italian ships of war. The weight of the first plate was 23 tons, and of the other 31 tons. The delivery of these plates has necessitated the formation of a train of 11 trucks specially constructed for the purpose. The armourplating of a ship of war by such plates as these costs about 200,000.

MINING IN CANADA.—A correspondent, writing from Toronto (March 5) says—"In the *Journal* of Nov. 17 you had a notice of the Frontenac Lead Mine. Since the opening of that mine I have obtained a very much richer mine; it assays \$75 in silver and 500 lbs. in lead to the ton of 2000 lbs. It is called the Croesus Mine, and is in the county of Frontenac. I was in California and Nevada for three years and at Virginia City, yet I think that in the country between the Shoshone and Mississippi Rivers, in the province of Ontario, there are as rich mines as in California."

COAL MINING IN AMERICA.—The miners of Maryland appear to be as unreasonable in their demands for wages as those in this country were. At Cumberland the Swanton and Potomac men have resolved not to go to work for less than 55 cents; yet the Hampshire and Baltimore men have been working at 40 cents, and still one man and his buddy (marrow) have in 19 days earned \$88·80 between them, or at the rate of \$2·24 (9s.) per day each for the entire time, and are likely to continue to do so.

RAVENSCLIFF MINING COMPANY.—We mentioned last week that the letters of allotment of this company had been issued, and that instructions had been sent to the company's representative in New Zealand by telegraph to commence work on their gold properties on Cape Jackson. Mr. Turner, being resident on the spot, has evidently lost no time in carrying out his instructions, as will be seen by reference to another column, in which it is stated that he had already made a commencement. When the prospectus of this company was issued attention was drawn to the very advantageous position in which the company stood in having all necessary machinery ready to be set in motion at very short notice, and a gentleman resident on the spot to commence and superintend the operations. In these respects the statements of the prospectus have been fully borne out by facts, and if the other matters the expectations of the directors shall be as speedily and favourably realised the company has, without doubt, the prospect of a prosperous future before it. Our readers will perhaps remember that the prospectus, which was advertised in our columns, stated that the main features relating to the company's New Zealand gold properties were as follows:—1. The properties lie together, are easily accessible, and held at moderate rentals. 2. The paying character of the reefs has been proved by a series of crushings of a large quantity of stone. The uncertainty, therefore, attendant upon a result calculated from a mere assay of samples is thus entirely eliminated. 3. Much work has been done for opening out the mine, and the portion of the reefs standing between Nos. 2 and 4 levels, from which 2 ozs. of gold to the ton of stone have been obtained, is more or less ready for extraction. 4. No pumping machinery is required in order to keep the mine drained to the depth of about 500 ft. from the highest point of the reef. 5. The quartz crushing and other machinery is in excellent working order, and mining operations can be resumed immediately. 6. Two other reefs besides the one that has been partially explored are known to exist on the properties. 7. The vendors take the greater part of the purchase money in shares, thus evidencing practically their confidence in the paying character of the mine. Now, if the great body of the stone, from a portion of which a crushing of 3 ozs.

the ton was obtained, shall hold good, it seems likely that early returns of gold will be made. It would seem likely, too, that Mr. Turner would naturally turn his attention, in commencing work on the mine, to this particular section of it, and while it would be imprudent to calculate too confidently on the whole of the stone turning out as rich in gold as the portion of it that produced the above-mentioned result, yet, as the crushing of 1560 tons of stone, as the prospectus states, gave an average yield of 12 dwt. of gold to the ton, while, according to Mr. F. Claude's assay, several pennyweights of gold per ton were left in the tailings, there seem to be reasonable grounds for anticipating a favourable result at an early date.

THE SCOTCH MINING SHARE MARKET—WEEKLY REPORT AND LIST OF PRICES.

During the past week the market has continued idle, owing to the uncertain appearance of foreign affairs. Though prices are affected very little as yet still the enormous loss that would accrue if the present check to business is not soon satisfactorily disposed of must be kept in view. It is, however, impossible that business can suffer the present check long. However, the foreign crisis is arranged there will be ups and downs in prices, for when investors are uncertain what to do now and then a party will gather confidence to deal in some particular security, which is, therefore, likely to rise or fall according as the desire is to buy or to sell it, more than it would in ordinary circumstances.

In shares of iron and coal concerns Benhar, old and new, have each fallen 12s. 6d. per share; Marbella, Omon and Cleland, also Scottish Australian each 2s. 6d. Chapel House shares are firmer, but the 7½ per cent. debentures show no change. The Benhar Company recommend a dividend of 4 per cent., which compares with a dividend at the same rate six months since, but 6 per cent. was paid twelve months since. Muntz's Metal dividend is to be 10 per cent., with a bonus of 2½ per cent. An extraordinary meeting of Crown Preserved is to be held on March 27. The Stand Lane Colliery is requiring more capital, and has made two calls, each of 5s. per share, payable on April 10 and May 10. The shares (5s. each) will then be 6s. paid up, and as there are 20,000 of them the amount thus raised is 10,004. Andrew Knowles and Sons are at 6s. dis. Bilbao, 27; Bolokow, Vaughan, 8, 55%; ditto, B, 35%; and ditto (pref.), 19%; Cannock and Huntington, 8 dis. Cardiff and Swansea, 22s. 6d. C. Cannell and Co., 5½ dis. Chapel House, 5s. to 6s. Crown Preserved, 30s. Darlaston 5 per cent., debentures, 35. East Cannock, 10 p.m. Ebbo Vale, 7½. Great Western, 30s. John Bagnall and Sons, 60s. John Brown and Co., 12½ dis. Midland, 40s. dis. Muntz's Metal, 75s. pm. Nant-y-Glo and Blaina (pref.), 17 to 19. Newport Abercarn, 80s. New Stanhope (pref.), 6s. to 75s. Rhymney (new), 5%. Sandwell Park, 12½%; ditto (new), 50s. pm. Scottish Australian, 35s. Sheepbridge, 19½ dis. Silkstone and Dodworth, 22½%; ditto, 6s. Spon Lane, 6 dis. Staveley, A, 19 pm.; ditto, B, 45s. 9d. pm.; ditto, C, 7½; and ditto, D, 12½. South Wales, 5. The Horsely, 50s. dis. Thorp Grawby Hall, 50s. to 60s.; ditto (pref.), 10. Tredegar, A, 10½. Vancouver, 20s. dis. Walsall Wood, 50s. dis. West Cumberland, 8½. West Mostyn (pref.), 25s. William Cooke and Co., 31. dis.

Shares of foreign copper concerns have been good. Tharsis mark an advance of 25s. per share, ditto (new) 15s., and Cape 10s. It is generally expected that the next Tharsis dividend will be no less than the former one, while the prospects of this particular business are much better. Huatafalla are at 75s. to 80s. Kapunda, 18. 3d.; New Quibrala, 27s. 6d.; Panucillo, 27s. 6d.; Rio Tinto, 5 per cent., 55%; York Peninsula, 5s. to 7s. 6d.; and ditto (pref.), 17s. 6d. to 20s.

Shares of home mines firm, but quiet. Glasgow Cardon have been done at a small advance of 6d. per share. The second boring machine is now at work at Derwent Lead Mine, and good progress is being made; the middle vein at the 93 fm. level is worth 12½ ton per fathom, and looking very well. West Tankerville are easier, although the returns for the present month are increased from 35 to 40 tons. Bambylde are at 4s.; Combmarin, 2s. 6d.; East Van, 6s.; Great Laxey, 20½%; Leadhills, 7s. 6d.; Mwyndy Iron Ore, 35s.; Penfurther, 4s. to 5s.; Rhosenor, 30s. to 35s.; South Condurrow, 10½ to 11; West Chiverton, 13; West Tankerville, 12s. 6d.; and ditto (pref.), 25s.

In shares of gold and silver mines there has been nothing doing, notwithstanding that the reports from various mines are more numerous this week than last. Almada and Trito have discovered a new east lode, Providencia, 1 fm. wide, north in east cross-cut from tunnel. The produce of Antiquia in December was 57 ozs. gold from 65½ tons mineral, and a loss of 237L recurred. In January Chontales worked 12 heads by water power, treating 850 tons quartz, which yielded 238 ozs. gold, at a loss of 107L; there are 850 tons more waiting at the stamps, and if more heads arrive in time it is hoped next month's return will be a full one. The prospects of Don Pedro are described as very cheering, though the rich course of ore at the bottom of the mine could not be worked through want of drainage; in January the cost was 2847L, and produce 5000 oits. (2125L), while the clean-up for first division of February gives 2117 oits. The produce of Frontino and Bolivia for December was 497 ozs. gold, from 661 tons mineral, and 333 ozs. gold dust were purchased from tributaries, and the result is a loss of 12L, but better returns are expected for January. The Javali mill worked 35 days in January, crushing 1900 tons quartz, which yielded 577½ ozs. gold, at a profit of 41½%; the dry season has now set in, so there is no hope of working with water till June or July. The clean-up at the Original Amador Mine of London and California for February is estimated at \$5000. This week's Richmond run is \$90,000, and it is announced the coupons and debentures which fall due on March 25 are to be paid. The produce of St. John del Rey for the first division of March is 10,000 oits. (3875L). The results of working at Sierra Buttes Mine for February were—receipts, \$19,341; and total California expenses, \$12,905; and at Plumas Eureka—receipts, \$35,585; expenses \$15,884. Chicago are at 27s. 6d.; Eberhardt, 6; Emma, 1s. 6d.; Flaggstaff, 13s. 6d.; Frontino, 30s.; Javali, 6s. 6d.; Pestarena United, 3s. to 5s.; South Aurora, 2s. 6d. to 5s.

Shares of oil companies are very firm. Uphall are 2s. 6d. higher, and Oakbank 1s.; while Young's Paraffin are 3s. 9d. lower. Bank Hall have been done at 5½ ex div., and Runcorn Soap and Alkali at 7 dis. The report of Price's Patent Candle Company states the profits for the past year at 37,939L, including 12,417L brought forward. The dividend on the preference shares absorbs 2101L, and a dividend of 16s. per share, being at the rate of 4 per cent. per annum, is recommended for the ordinary shares, leaving a balance of 5838L to carry forward.

Shares of miscellaneous companies are perfectly neglected. The Birmingham Patent Bolt and Nut Company have announced a dividend of 10 per cent. The second instalment of the London and Glasgow Engineering and Iron Shipbuilding Company's dividend—namely, 15s. per share, being at the rate of 6 per cent. per annum—is payable on April 1. The balance sheet to be submitted at the sixth ordinary meeting of the Diamond Rock Boring Company, to-morrow, shows a loss of 15,702L, after absorbing the reserve of 4000L, consequently no dividend can be paid. The directors propose to issue 15,000L more debentures to enable them to accept contracts now being offered, both for water-boring and tunnel-driving, from which they would expect more profitable results. The report of the United Limmer and Vorhole Rock Asphalt Company states the profit for last year was 4551L, including 56L brought forward; 1200L of this is added to reserve, increasing that to 2997L, and the balance is carried forward; but a dividend of 3s. per share can be declared if sufficient debentures are subscribed to meet the revenue used in purchasing the Sicilian Mine. The Val de Travers Asphalt Paving Company's report states the net profits last year were 7422L, including 2760L brought forward, from which a dividend of 8s. per share, being at the rate of 4 per cent. per annum, is recommended to be paid on April 16, and 3422L carried forward. Shares of chemical companies steady. Lawes's 7 per cent. (pref.) scarce; Langdale's are 9½ to 10%; Lawes's, 7½; and Newcastle, 4½. In shares of Wagon Companies, Scottish are reduced 1s. 3d., and the new shares 6d., but the others show no alteration; Gloucester, at 9½, ex div.; Lancaster 2½; Starbuck, 12½; and Swanage, 2½.

MONKLAND IRON AND COAL COMPANY (Limited).—At the seventh annual meeting of the shareholders of this company, on Tuesday, the report and accounts were unanimously adopted, and the retiring directors re-elected. The revenue account for 1877 shows the debit balance of 668L last year now stands at 4232L, which has to be carried forward. The dividend on the preference shares is cumulative, and has to be paid out of profits before any dividend can be paid on the ordinary shares. There is now 11,000L, or 11s. per share, of dividends in arrear on these preference shares. The outlay on works, pits, &c., for the year has been 12,077L, of which 10,000L is charged to revenue, and this outlay is expected to be considerably less in the current year. During the year debentures bearing 7 per cent. interest have been issued for 7500L, and debentures for 4700L repaid; the amount issued is 68,559L, leaving 31,441L to issue. The total indebtedness of the company on debentures, sundry creditors, and bank is 108,350L, while the floating stocks and cash due amount to 79,994L, the difference of 28,456L being represented by the pig and malleable ironworks, railways, houses, fixed and moveable plant, pits, and mineral leases, which the directors consider ample security, and, therefore, recommend their debentures as a safe investment, yielding a good rate of interest. The Chairman explained that they had, in common with the other ironmasters, limited the production. The directors' fees are 500L a year, but they consider they save the company in financing much more than this sum, so that really their services are got for less than nothing. In addition, they have jointly supported the concern to the extent of 28,800L, without which the company could not have been kept going, and would very likely, through liquidation, have fallen into the hands of a few of the largest shareholders. During the last four years of bad trade this company has been losing every year. During the first three years the average loss was 1400L a year, and it is an encouraging circumstance to find the loss somewhat lower, at 1000L. There is no doubt as to the great substantial value of this property, and that it will again become a fairly remunerative one, provided sufficient financial support is afforded.

EAST PLYNLLIMON.—Owing to the prospect of an improvement in lead, there is again an enquiry for lead mines, and a company has been proposed to work this mine, situated in the county of Montgomery, having Plynlimon Mine on the west, which is now dressing nearly 40 tons of silver-lead ore per month, and has sold upwards of 4000L worth of lead. There is only 160 fms. from the drawing shaft of the Plynlimon to the boundary of East Plynlimon, and all the levels of the former are driven east, proving good lead to the boundary; indeed, the 24 is on or past the boundary, and proving 2½ tons of lead ore to the fathom. There is an adit level driven at this mine towards the same lode as that of Plynlimon Mine for 150 fms., but it was not continued far enough. This level is within a trifle equal in depth with the 24 in Plynlimon Mine, and it is generally considered there are only 10 fms. more to continue, when it will intersect the main lode; also on driving north-east on the course of the lode there will be cross-course, where, according to the best mining authorities, abundant riches may be expected. This mine would not require machinery for underground operations for years, hence a small outlay will suffice in a short time to enter this safe investment on the Dividend List.

WEST WYE RIVER MINE.—This is another mine, which could either be worked separately or in connection with East Plynlimon, the two mines having a mile and a-half on the course of the lode. This mine is on the same lode as that of Plynlimon and Nantigo, or James Brook Mines, the latter of which is dressing 20 tons of silver-lead ore per month, and has sold over 5000L worth. There is an adit level driven for some distance, and a shaft sunk for 15 fms., with splendid ribs of lead

in the bottom, the lode being totally composed of lead, sulphur, &c. With the assistance of a small water-wheel and pump, the working here would be very economical. The royalty is one-sixteenth.

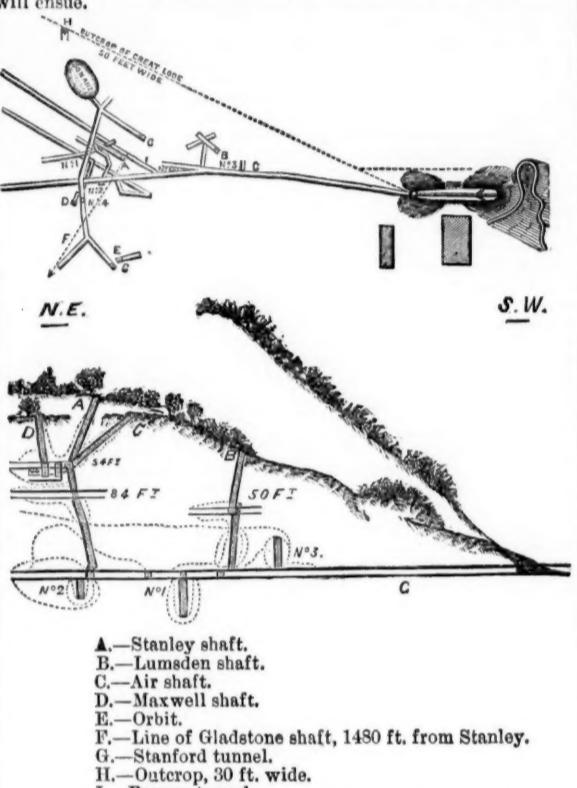
J. GRANT MACLEAN, Stock and Share Broker.

Post Office Buildings, Stirling, March 21.

TECOMA SILVER MINING COMPANY—No. IV.

We have now the pleasure to supply our readers with a sight of the diagrams representing the property recently surveyed, and we trust the description of the two plans will be found of interest. The first is the working plan of the mine. From the same it will be seen a long and valuable tunnel turns to the left from the mouth, which will be found at the immediate right-hand corner. A little further to the right a winding road in the hill is perceivable, and near by are the tips of the mine, with a blacksmith's shop and ore house to the side thereon. The blocks placed underneath distinguish the general offices of the company, comprising bed-rooms for the miners, superintendent's and assay rooms, as well as a general board house.

The letter G denotes the main tunnel, provided with well laid down tramway. The remainder of the letters, as well as the numbered points, have their significance with diagram No. 2, being the section of the mine. Undernoted thereto are particulars of the numerous shafts, rises, and winzes, as well as certain opened up tunnels, find their place to correspond with their identical numbers. It is not our intention upon this occasion to refer to any but the Raynar Tunnel, which is marked by the letter I, and the bonanza. This former channel was the one which had to be abandoned for want of money at a point where every encouragement was apparent of rich ore being obtained, the production of which has been already 1500 tons of remarkably fine metal. At the immediate end of the dotted lines, and marked H, a fine outcrop was discovered by the company's engineer, Mr. St. Stephens, who in his investigation there came upon a great lode 30 ft. wide, supplying spots of lead and iron. The existence of this confirms in the minds of the experienced that by connecting this outcrop with the Raynar Tunnel no disappointment will ensue.



It appears there is somewhere about 250 ft. to be cut in order to arrive at the afore-named result; and it may not be out of place to mention that on the success of joining this tunnel with the lode thus outcropping about 500 ft. of backs would be gained for stopping purposes. Out of the bonanza, which is situated 80 ft. above the Raynar Tunnel, and connected therewith by a chute of ore, 40 tons of rich silver ore were taken out. The chute as tapped in the Raynar Tunnel yielded about 350 tons of mineral. The following is an extract from the letter of a correspondent:

"Throughout the workings of the Tecomá Mine a pipe of ore is visible along one side of the inclines, constantly changing in form and width, from a mere thread to 2 ft. to 3 ft. Several pockets of good ore continue to show up. At the bottom of the incline the pipes of ore look strong, and have continued to hold. The ore extracted is a carbonate intermixed with galena, smelts freely, and is highly prized for its fluxing properties."

In an after number of the Journal we shall give a transverse section of the mine.

ALMADA AND TIRITO CONSOLIDATED SILVER MINES.

TIRITO.—Capt. William Clemo, Jan. 25: The stope in the first lode above the tunnel level, south of the engine-room, has nothing new to report. Our prospecting cross-cut south-east through the south slide at the tunnel level has no change. In the winze in the drive west, from the above cross-cut, the lode has very much failed; we have now suspended it, and are working in the back, where we have a good ball of ore, but it has not the appearance of a thing that will improve or last for any great length of time; we must get further east to find the main body of the lode.

PROVIDENCIA.—The lode in the underhand stope, below the tunnel level, continues without change. The stope in the back in this place improves as we rise on it. The end of the 10 north is turning out some very good green ore.

MINA GRANDE.—The west branch has nothing new to notice since last reported on. The cross-cut west at the 7. above tunnel level, appears to be getting near the lode. The winze sinking below the 12 is now down 34 ft. 6 in.; it is now in a disordered place in the lode; the lode appears to have suddenly shot off to the west. We have now cut in after it, and it looks to be improving again, and with better quality ore.

TRITO.—Feb. 1: The stope in the first lode above the tunnel level, south of the engine-room, continues without change. Our prospecting cross-cut south-east through the south slide at the tunnel level has no change. The works in the back of the drive west from the above cross-cut has very much improved since last reported on.

PROVIDENCIA.—The underhand stope below the tunnel level has been idle this week, as we are now sinking a winze in the stope to communicate with the 10. The stope in the back in this place continues to improve, and is producing very fairly for black and green ore. The 10 fm. level north end has now got under the underhand stope in the Providencia. We have now stopped it, and began to rise to meet the winze sinking in the stope above. We hope to connect these places next week, when the driving of the end will be resumed.

MINA GRANDE.—The west branch continues to look well 7 fathoms above the tunnel level; the cross-cut west at this level has now cut the west branch, but it is very thin at this point, which is a good bit south of our works at the tunnel level. We are now driving north on it to get over the stope, when I think to find it at the tunnel level. The winze sinking in the 12 fm. level has slightly improved in the past week.

TRITO.—Feb. 8: The stope in the first lode above the tunnel level, south of the engine-room, has no change worthy of report. Our prospecting cross-cut south-east from the south slide at the tunnel level, continues without change. The works in the back, in the drive west, from the above cross-cut, appear to be slightly improving as we rise.

PROVIDENCIA.—The underhand stope has now been resumed, as we have communicated the winze (sunk in it) with the 10 rise. The stope has no change since last reported on. The stope in the back in this place continues to look favourable. The driving of the 10 north has been resumed; there is no change to notice.

MINA GRANDE.—The west branch continues the same as last week. The drive north from the west cross-cut at the 7, above the tunnel level, appears to be getting into ore ground. The lode in the winze sinking in the 12 is still very much disordered.

Frank W. Breach, Jan. 25: There is little to mention as regards change during the week. South of the slide in the Trito we are still breaking some doore ore, and in the level we are driving east of south, in order to get away from the influence of the dislocation before commencing a main east and west cross-cut. In the 10 north we have met the ore we are sinking in below the tunnel. The ore is like all from the Providencia Mine, of a high ley, and also like it in never being

sold or continuous, bands of poor spar crossing the ore in several directions, but the ground is very cheaply worked. In the new cross-cut west over the tunnel in Mina Grande we have bands of black ore, and daily expect to cut into the west branch.

Feb. 1: You will notice that Capt. Clemo mentions an improvement in the ore south of the slide. The extent of payable ground has increased considerably during the past week, but still it must only be regarded as a deposit under the slide, and not as forming a part of the main course of ore for which we are exploring. The winze sinking in the 12—Mina Grande—is by no means satisfactory; the ground is very disordered by felspar, and I fear that on arriving at the 24 we may have to cross-cut for the ore. Under the circumstances, it is as well that the end in the 24 is stopped until we have better data as to the shortest line to drive the level on.

Feb. 8: There is little to note during the past week. The ore in the Providencia Mine under the tunnel we now know holds down to the 10, and we are opening out at that level for stopping. Next week I hope to send you a sketch of the works south of the slide in the Trito, as we have changed the direction of the explorations in favour of a plan, which we hope to make self-supporting at least, if no more.

The directors on the 18th inst. received the following telegram from Mr. Breach:

PROVIDENCIA.—New east lode discovered north in east cross-cut from tunnel; width of new east lode (Providencia), 1 fm. Ley of ore high; coppery; black; looking well; raining.

ECHOES FROM THE MINING MARKET.

The late advance in the tin standards has been almost wholly lost, and no more than 35L to 37L 10s. per ton can now be realised for the produce of our best mines. This compares with 90L to 95L only four years since, a difference to such mines as Carn Brae, Dolcoth, and Tincroft—the first-named of which raised and sold (as we have seen) over 300 tons during the last quarter—amply sufficient to explain the gloom that has again settled upon the tin mining market. The outlook is not very encouraging, especially as the wool ships are still bringing over colonial tin all the way from Australia to London for the nominal freight of 1s. per ton, and supplies do not decrease to any appreciable extent. The chief grounds for hope so far as holders of shares are concerned lie in the active response of the market to any upward movement in the Cornish standards, for this betokens vitality which it evidently still survives. There is also undoubted proof that the hard lessons of adversity have taught our mine managers to be more economical, and that, thanks to the improvements that have lately been introduced, foremost amongst which stands mining boring, the mines are worked at a less cost than four years ago, and that, consequently, a rise in the price of tin ore to only 50L per ton would enable several of our tin mines to return to a period of actual prosperity.

Lead shares have been in good demand, but the most prominent feature of the week has been the advance of 3L per share in East Van. The rise is certainly not justified by the report of this week received at the company's office, but the shares are so firmly held that any exceptional demand canes a more substantial advance than would otherwise occur. The allotment of D'Eres

The Ynisedwyn Company, Limited.

REGISTERED UNDER THE COMPANIES ACTS, 1862 AND 1867.

CAPITAL £60,000, IN 6000 SHARES OF £10 EACH.

£2 per share payable on application; £3 per share on allotment, and the remaining £5 per share in two instalments of £2 10s. each, at three and six months from allotment, when all liabilities will cease.

DIRECTORS.

GEORGE GOWLAND, Esq.
W. H. LETHBRIDGE, Esq.JOHN ROMANES, Esq.
P. W. SYDENHAM ROSS, Esq.NICHOLAS SADLER, Esq.
(With power to add to their number).BANKERS—THE IMPERIAL BANK (Limited), Lothbury, London, E.C.
SOLICITOR—ALEX. KERLY, Esq., Great Winchester-street, London, E.C.
AGENT—MESSRS. LIVINGSTON, RICHARDS, AND BEAUMONT, Swansea.

SECRETARY AND OFFICES.

W. H. HARRISON, Esq., 1, PALMERSTON BUILDINGS, LONDON, E.C.

This company is formed for the purpose of purchasing and working the well-known Ynisedwyn and Abercraf Collieries, as well as the Ynisedwyn Steel and Iron Works, situated at Ynisedwyn, about 13 miles from the port of Swansea. The works are connected with the Midland, the Great Western, and London and North-Western Railway (having their own branch railways and sidings, all of the standard gauge, capable of accommodating at least 1000 railway trucks at one time), and are thus in direct communication with all parts of the kingdom.

This extensive property (over 3500 acres of minerals, about 400 acres of surface, including several farms, a number of cottages, a manor and agents' houses) is held upon exceptionally favourable terms, under various leases, particulars of which may be seen at the offices of the solicitor.

There are four large collieries, fine iron and steel works, together with a good-sized foundry, and altogether a most efficient plant.

The Four Collieries are all extensive, and contain six seams of the purest anthracite coal, with an aggregate thickness of about 23 ft., and are estimated to contain 37,000,000 tons of workable coal. One of the seams (the celebrated Big Vein) is over 9 ft. thick. There are also veins of ironstone and fire clay, limestone, &c., all of which are elements of considerable value. The collieries are complete with the most costly plant, engines, boiler power—in fact, no outlay has been spared to bring the whole into the highest degree of perfection. From the pits an aggregate of at least 2000 tons of coal may be produced daily.

The Iron Works are among the oldest, if not actually the oldest established in the kingdom, and everywhere well known as the Ynisedwyn Anthracite Iron Works. They consist of two blast furnaces, hot blast stoves, and complete plant. The furnaces which were recently fitted and remodelled on the most approved principles, have been worked most successfully, producing a larger annual yield of iron per furnace than has been obtained by any other furnaces in this country using anthracite coal.

The two blast furnaces have not only produced pig-iron of the highest quality suitable for steel making purposes, but also spiegeleisen up to 17 per cent. metallic manganese, thereby far outstripping any of the German or other foreign manufacturers, thereby far outstripping any of the German or other foreign manufacturers, and commanding the highest prices in the market. This, of course, is the best test of any, and it is, therefore, scarcely necessary to refer to any other, but it may be worth while to mention that the trials of this iron under Mr. Kirkaldy's great breaking machine, at Southwark, gave some of the best results ever yet afforded with pig iron.

Ynisedwyn iron is in great demand for tin plate works, and, South Wales being the chief seat of the tin plate manufacture, the works are much more favourably situated for supplying the pig iron required than the hematite furnaces of Barrow and elsewhere.

The Steel Works have been built under most elaborate designs, and in a most costly manner, but are not yet quite completed. They will require an outlay of between two and three thousand pounds to get into operation. It should be understood that the steel made is not the common steel of the Bessemer or Siemens' process, worth from £7 to £10 per ton, but Sheffield tool or cutting steel, worth £60 per ton, or even more, in samples of exceptional excellence. The trial samples of this steel, submitted to Messrs. Robt. Hadfield and Co., the large steel casting company in Sheffield, realised results never yet obtained by either Swedish or Russian steel and in their printed report it is stated that if only equal quality could

be maintained, a full market and high prices were secure. As this steel process is founded on purely practical, though at the same time scientific principles, there should be no difficulty in ensuring the like results from using the like materials the great point being the purity of the fuel, as it is not difficult to purchase fairly good iron ores. Pure fuel, however, is of a most exceptional occurrence, and now that steel is pretty sure to supersede iron for many purposes, it is likely more than ever to command a high price.

Apart from the profit likely to be derived from the development of the steel manufacture, and reckoning only upon a restricted output of coal and a moderate make of iron, the profit may be fairly estimated as follows:—

150,000 tons of coal, at £6 per ton £ 7,500 0 0

15,000 tons of iron, at £6. 2d. per cwt. 4,131 17 0

Equal to £11,631 17 0 per annum.

This amount of profit would after payment of charges of all descriptions, admit of dividends at the rate of about 14 per cent. on the capital of the company.

That profits to the amount named are the least which may be calculated upon is clearly indicated by careful reports, based upon data afforded by the raisings of coal at these collieries for some years, according to which the cost of working a fair quantity of coal would be from 4s. to 4s. 5d. per ton. The numerous orders now in the hands of Messrs. Livingstone and Co. may be taken as a proof that 5s. 6d. to 6s. 6d. per ton may be realised. At the Iron Works an average of over 12,000 tons per annum was produced at a profit of about 9s. 2d. per ton, and during September 1876, the average cost of making 1153 tons of pig-iron was 6s. 9d. per ton. It is calculated that iron can now be made at Ynisedwyn for under 6s. per ton, and as the cost of labour and material is considerably lower than in September, 1876, when iron was made for 6s. 9d., it will be seen that this estimate of cost is not only well founded, but may be said to be outside one.

From enquiries made at the offices of some of the best firms in South Wales, it has been ascertained that there would be no difficulty in obtaining a ready sale for all the iron which can be turned out at from 7s. to 7s. per ton.

An estimate of the value of the property may to a certain extent be formed from an extract from the balance sheet of the last owners (which will be found with the prospectus), showing the outlay made upon the plant and from the valuations of Messrs. Daniel, who deservedly occupy a very high position as engineers in South Wales. These afford sufficient evidence of the great worth of the property and the very reasonable terms upon which it has been acquired. The valuation of Messrs. Daniel was (as a reference to their reports will show) £137,472.

The plant and machinery are so extensive, and in such perfect working order, that little, if any, expenditure will be required upon them; and, as payment for cost sold will be immediately forthcoming, only a small working capital will be found necessary. To provide against contingencies it has, however, been deemed prudent to reserve a sum of 10,000*l.*, which will allow of a sufficient working capital for all purposes.

These properties possess exceptional advantages, which will enable profits to be realised in bad times, when others not so well circumstanced can only be worked at a loss.

Prospectuses may be obtained on application at the offices of the company, and at the solicitors, where copies of the contracts for the purchase may also be seen.

ECONOMIC TREATMENT OF COPPER ORES.

An invention which relates to a method for effecting the extraction of copper contained in what are known as cupreous pyrites or as iron pyrites containing a small quantity of intimately mixed copper sulphide or of copper compound or compounds, such pyrites being either those or similar to those pyrites containing copper which occur in the Rio Tinto and Tharsis Mines, in the kingdom of Spain, and in the San Domingo mines and districts, in the kingdom of Portugal, has been patented by Mr. JAMES MASON, of Eynsham Hall, near Witney, Oxfordshire, which consists in subjecting the pyrites either in its natural condition, or either broken or subdivided, and placed in heaps, mounds, or piles to the combined or to the alternate action of atmospheric air and of water in order that certain compounds of copper which before such treatment were insoluble in water shall by such treatment be in part or entirely converted into a soluble form, and in such condition be extracted by means of the water employed. The solutions or liquors containing the soluble compounds of copper thus resulting may then be submitted either to a cementation process, in order that the copper may be separated therefrom, or any other method for effecting the separation or utilisation of the copper, or of the salts or compounds of copper, may be adopted.

In carrying out the invention Mr. Mason prefers that the pyrites should be placed in heaps or mounds, and that they should be so arranged as that the atmospheric air and the water should have free access thereto—that a current of atmospheric air should pass from the lower to the upper and lateral portions of the mound or heap, and that the water should be caused to flow or trickle over the surface of such ore or ores from above downwards. Pyrites having thus been treated will be found applicable for the production of sulphurous acid in the manufacture of sulphuric acid, and may be employed in a manner similar to that in which crude pyrites or pyrites derived from similar sources are now employed.

TRANSMITTING COMPRESSED AIR.

It has been found desirable in transmitting power to machines moving over short distances to convey such power, whether it be steam or compressed air, through flexible tubing, and, with a view to facilitate the necessary connections between the stationary source of the power and the moving machine which utilises such power, some ingenious improvements have been invented by Mr. T. F. ROWLAND, of Green Point, Brooklyn, U.S., which consist in an automatically moving drum, carrying a flexible tube, through which power is communicated, and an apparatus for automatically winding and unwinding such tube. Around a drum, by preference hollow, is coiled a flexible tube and also an unwinding cord. This drum is supported on a hollow central pivot, which is supported by a beam, and ends in a solid rod. The pivot tube after entering the drum turns at a right angle, and is carried to the periphery of the drum by means of a tube. To the end of this tube a flexible hose is attached. The other end of the tube carries a packing sleeve, through the centre of which passes the stationary tube in such a way as to make a tight joint between the revolving tube and the stationary tube, while at the same time it allows the tube to revolve freely around the tube. This tube is connected to the apparatus supplying the compressed fluid, which fluid passes up the tube, thence through the packing-ring into the revolving tube, thence through the elbow and tube to the flexible hose, which hose is connected to the moving machine, where the power is utilised, and it will be evident that this tube can be wound and unwound upon the drum without disturbing the tight connection.

In order that there need not be too much strain in drawing the flexible tube from the drum he winds around the said drum a cord having an equal number of convolutions with the hose, and he allows the hose to be loosely attached to the moving machine that is to be attached in such a manner that there is a certain amount of slack between the drum and the machine. The cord is likewise attached to the moving machine, and it is evident as this machine begins to move away from this drum that, acting upon the cord, it will unwind the drum, and allow the hose to convey the compressed air to the moving machine without being itself subjected to the strain of unwinding the drum. He attaches likewise to the spindle a drum, having a cord winding around it in

the opposite way from that of the cord first mentioned. To this cord a weight is attached, which weight has sufficient power to wind up the tube upon the drum whenever the first-named cord is slack. By placing this apparatus over the centre of the traverse of the moving machine it is evident that a hose may be employed which is only half the length of the entire traverse of the machine. He finds this very useful for connecting power to such machines as are employed to deposit and remove the coal from gas retorts; but it can be usefully employed to communicate power to any other moving machine which does not traverse any very extended distance.

STEAM-ENGINE JACKETING.

No felt fabric, cement, cork, or plastic material has hitherto been found long to resist the action of the caloric disengaged from the apparatus to which they have been applied to preserve them from the effects of the ambient air; placed in immediate contact with this apparatus, the first layers of the material soon become carbonised and used up, exposing fresh layers which carbonise in their turn, and so on until the entire covering, so to say, falls into dust. Thus the application as anti-radiating covering of felts and of felt fabrics, excellent in itself, becomes by reason of the little time they last somewhat expensive, especially when applied to machines working at high pressure, and the object of this invention is to remedy this serious defect—firstly, by improving the manufacture of felt fabrics, and then by applying thereto spiral springs, which are also applicable to other kinds of coverings for steam, ice, and other machines, to keep them at the desired temperature. To manufacture the fabric which forms the subject of the present invention of Mr. CHARLES GAUDEFROY, jun., of Asnières, near Paris which not being woven although having warp and woof is termed a felt fabric he spreads first a more or less thick layer of flock, cowhair, horsehair, or other hair or shag upon a table, the raised edges of which limit the breadth of the fabric; he then places the woof, which is composed of a cord of the same material passing from one side to the other of the table in its breadth, leaving a space of about an inch between each cord; then places a fresh layer of flock similar to the first, carrying the sheet, fleece, or lap thus obtained to a loom or frame upon which he has previously arranged thick threads of flock in the direction of the length of the fabric and placed at between one and two inches apart or thereabout, which threads form the warp of the felt fabric. Then with another similar thread he makes a seam or stitching which passes through the sheet of flock, comes out underneath at the side of the warp thread, then passes over this thread and rises perpendicular to the surface; to descend again in the same manner, take another warp thread, and so on. Each stitch of the sewing is at the same distance from the other as that which separates the cords of the woof. This sewing, therefore, tightens the sheet of flock from each side against the woof, and gives it sufficient strength for the use for which this felt fabric is intended.

To prevent the disintegration of the fabric spiral springs are applied running in any direction, but preferably in that of the length of the fabric, and being placed side by side in its entire breadth. These springs are attached to the felt fabric by any available means; the simplest of these means consists in laying the spiral springs on the sheet of flock before the above-mentioned sewing operation exactly above the threads placed beneath the frame, and to tie them to these threads in the same manner as above described for the sewing, by taking at each stitch one or two threads of the spiral formed by these springs. They are thus firmly and securely fastened to the felt fabric. Mr. Gaudefroy is of opinion that the contact of the apparatus and of the materials or coverings which are to guard or protect them from the effects of the ambient air is the cause of their rapid destruction. Now, the felt fabric of this invention being furnished on one side with spiral springs, by placing this side upon the apparatus they are surrounded by a layer or bed of air, which while preserving the felt fabric, increases the anti-radiating property of the covering. The spiral springs may be round, oval, square, or flat, and be laid in any direction. They may also be first placed upon the machine or apparatus to be covered, and then covered with the anti-radiating material or fabric chosen; or the springs may be fastened to this material or fabric before the operation of covering the machine or apparatus. In the case of apparatuses presenting very large surfaces to be covered, he replaces the spiral

springs by metal bands, either solid or pierced with holes, and laid edgewise at such distance apart as may be found most suitable in each particular case.

PUMPS.—MESSRS. ANDREWS and DRAGON, of Reading, propose to form a double-action pump by means of a loose internal cylinder, having lateral play only, as hereinafter described; to effect this they form a pump cylinder having the usual inlet and outlet ports at its ends, and containing the ordinary piston and piston rod; the bottom of this cylinder is screwed in, and the whole is externally fitted and turned (with or without piston rings) so as to fit into an outer corresponding cylinder, which is also provided with inlet and outlet ports, corresponding in size and position with those in the inner or piston cylinder, and which outer cylinder is bored and turned to receive it; this outer cylinder chamber is made longer than the inner cylinder to the extent necessary to allow the said inner cylinder free lateral play to the extent necessary to shift the ports in the same fashion as the ports of an ordinary steam slide valve are shifted. The working result is that after a stroke of the piston, the back part of the inner cylinder being naturally full of liquid, which is retained by a foot or check valve fitted in the suction pipe, the return stroke lifts or pushes the inner cylinder, which is loose, to the opposite end of the outer cylinder, and thus shifts or reverses the ports after the fashion of an ordinary steam slide valve, and allows the ejection of the liquid and a fresh suction from the opposite end, the ports being full open during the whole time of suction and ejection, and only shifting their position at the commencement of each stroke.

GREAT WESTERN COLLIERY COMPANY.—At the meeting, on Monday, the resolution for voluntarily winding-up the company was confirmed; and at an extraordinary meeting which followed it was resolved to reconstruct the company on terms placed before the proprietors.

THE "BONANZA" KING, AND KENSINGTON HOUSE.—It is not true that Mr. John Mackay has purchased Baron Grant's Kensington palace. Mr. Mackay says the United States is his home, and he intends to spend his declining years on American soil.

LEAD ORES.			
Date.	Mines.	Tons.	Price per ton.
March 16	Hornachos (S.-lead)	19 11 2	£23 2 8
	—South Darren	100	16 11 6
18	North Hendre	100	11 1 6
	—ditto	100	11 8 0
21	Ladywell	10	10 0 0
	Roman Gravels	50	11 4 6
	—ditto	60	11 3 6
	—ditto	60	11 2 6
	—ditto	30	11 10 6
	—West Tankerville	40	11 2 6

BLEND E.			
Date.	Mines.	Tons.	Price per ton.
March 21	Roman Gravels	80	£ 3 17 0

BLACK TIN.			
Date.	Mines.	Tons. c. q. lb.	Price per ton.
March 20	Wheat Coates	4 0 3 23	£23 2 6
	W. Grenville	14 9 3 8	38 17 6

PERUVIAN TIN ORE SOLD IN LIVERPOOL.			
Date.	Mines.	Tons.	Price per ton.
March 6	814	£237 15 0	Thomas Bolitho and Sons
	34	34 7 6	ditto
	9	37 15 0	Williams, Harvey, and Co.
	614	34 15 0	Dauibuz and Co.
	812	36 10 0	R. R. Mitchell and Co.
	8	36 10 0	Redruth Tin Smelting

WATSON BROTHERS' MINING CIRCULAR.

Ten years ago the weekly information which had previously been published for a great number of years in WATSON BROTHERS' Mining Circular was transferred to the columns of the *Mining Journal*, with the following announcement; which is now reproduced in consequence of the numerous letters and enquiries handed to them of late in reply to one which appeared in the *Journal* on the Clementina Mine.

The great extension of mining business, the difficulty so often complained of by country shareholders in getting accurate and disinterested information as to the state of Cornish and Foreign Mine, and of the financial and real position of mining companies generally, have induced Messrs. WATSON BROTHERS to make their Circular now published in the *Mining Journal* more extensively known, and to state—

That they issue daily to clients and others who apply for it a Price List (as supplied to most of the London and country papers), giving the closing prices of Mining Shares up to Four o'clock.

They also buy and sell shares for immediate cash or for the usual fortnightly settlement in all Mines dealt in on the Mining and Stock Exchanges, at the close market prices of the day, free of all charges for commission. They deal also, on the same terms, in the Public Funds, Railways, Telegraphs, and all other Securities dealt in upon the Stock Exchange.

Having agents in all the mining districts, they are constantly getting mines inspected for their own guidance, and will also obtain special reports of any particular mine for their clients, for the inspecting agent's fee of £2 2s.

In the year 1843, when mining was almost unknown to the general public attention was first called to its advantages, when properly conducted, in the "Compendium of British Mining," commenced in 1837, and published in 1843, by Mr. WATSON, F.G.S., author of "Gleanings among Mines and Miners," "Records of Ancient Mining," "Cornish Notes" (first series, 1862), "Cornish Notes" (second series, 1863), "The Progress of Mining," with Statistics of the Mining Interest, annually for 21 years, &c., &c. In the Compendium, published in 1843, Mr. WATSON was the first to recommend the system of a "division of small risks in several mines, ensuring the success in the aggregate," and Messrs. WATSON BROTHERS have always a selected list on hand. Perhaps at no former period in the annals of mining has there been more peculiar need of honest and experienced advice in regard to mines and share dealing than there is at present; and from the lengthened experience of Messrs. WATSON BROTHERS they are emboldened to offer, thus publicly, their best services and advice to all connected with mines and mining.

Messrs. WATSON BROTHERS are daily asked their opinion of particular mines, as well as to recommend mines to invest or speculate in, and they give their advice and recommend mines to the best of their judgment and ability, founded on the best practical advice they can obtain from the mining districts, but they will not be held responsible, nor subject to blame, if results do not always equal the expectations they may have held out in a property so fluctuating as mining.

WATSON BROTHERS,
MINEOWNERS, STOCK AND SHARE DEALERS, &c.,
1, ST. MICHAEL'S ALLEY, CORNHILL, LONDON.

D'ERESBY MOUNTAIN.—In deference to a pretty general feeling a proposition will be submitted to the meeting on the 28th inst. to subdivide the shares into 10,240 shares, so that each 1-512th share with 20*l.* paid would stand as 20 shares of 1*l.* There are several shareholders, however, who consider it would be best to keep the mine in the present limited number, and we should be glad to have the opinions of others prior to the meeting.

D'ERESBY CONSOLS.—The agent writes that the end in the heading of the Gorle lode is improving daily. There is on one side a large vug, and fine stones of solid lead, samples of which have been sent to the office of the company. A full pare of men will be put on there at once, as well as to drive the adit towards Cobblers lode.

SATURDAY, MARCH 16.—Market quiet. D'Erésby Mountain, 55 to 65; Van, 25 to 27; Roman Gravels, 8 to 8½; West Chiverton, 13½ to 14½; Rookhope Lead, 17s. to 19s.; Great Laxey, 3½ to 4; Grogwinion, 3½ to 3½; West Pateley Bridge, 2 to 2½; Carr Brae, 42½ to 45; Dolcoath, 31 to 33; South Condurrow, 10 to 10½; Tincoff, 10 to 12; Agar, 3½ to 4; Grenville, 2½ to 2½; Peevor, 6 to 6½.

MONDAY, MARCH 18.—Market again quiet, and prices without material change.

TUESDAY, MARCH 19.—Market more active. East Van advanced to 4½; South Condurrow to 10½, and Grenville to 2½, buyers. East Van, 4½ to 5; South Condurrow, 10½ to 10¾; Greville, 2½ to 3½; D'Erésby Mountain, 55 to 65; Roman Gravels, 8½ to 8¾; Van, 25 to 27; West Tolgus, 71 to 73; Agar, 4 to 4½; Great Laxey, 20 to 21; West Chiverton, 13½ to 14½; Tankerville, 3 to 3½; Grogwinion, 3½ to 3¾; Parys Mountain, 8s. to 10s.; Devon Great Consols, 3 to 3½; Richmond, 9½ to 9¾; Eberhardt, 5½ to 6¾.

WEDNESDAY, MARCH 20.—Tin shares quiet. Lead firm at quotations. East Van advanced to 6½, buyers. Carr Brae, 42½ to 45; Devon Great Consols, 3 to 3½; Dolcoath, 31 to 33; D'Erésby Consols, 5½ to 65; East Van, 6½ to 7½; Parys Mountain, 8s. to 10s.; Penstruhul, 4s. to 6s.; Roman Gravels, 8 to 8½; Rookhope Lead, 17s. to 19s.; South Condurrow, 10½ to 11; Tankerville, 3 to 3½; Tincoff, 10 to 11; Van, 25 to 26; West Chiverton, 13 to 14; West Pateley Bridge, 2 to 2½; West Tolgus, 71 to 73; Agar, 4 to 4½; Grenville, 2½ to 3½; Peevor, 6 to 6½; Wye Valley, 1½ to 2; West Wye Valley, 3 to 3½; Chontales, 1½ to 1¾; Eberhardt, 5½ to 6½; Flagstaff, 12s. 6d. to 15s.; New Quebrada, 1½ to 1¾; Pestarena, 5s. to 7s.; Richmond, 9½ to 9¾.

THURSDAY, MARCH 21.—The market rather dull. South Condurrow firm at 11, buyers. East Van shares have fluctuated throughout the day, and close 6 to 6½. D'Erésby Mountain, 55 to 65; Van, 25 to 27; Roman Gravels, 8 to 8½; West Chiverton, 13 to 14; Leadhills, 3½ to 4; Great Laxey, 19½ to 20½; Grogwinion, 3 to 3½; Rookhope Lead, 17s. to 19s.; Tankerville, 3 to 3½; West Wye Valley, 3 to 3½; Carr Brae, 42½ to 54; Dolcoath, 31 to 33; South Condurrow, 11 to 11½; Tincoff, 10 to 11; Grenville, 2½ to 3½; Eberhardt, 5½ to 6½; Peevor, 6 to 6½; Agar, 4 to 4½; Richmond, 9½ to 10¾; Eberhardt, 5½ to 6¾; Chontales, 1½ to 1¾.

FRIDAY, MARCH 22.—There is a little doing in tin shares, and prices are about the same as quoted yesterday. East Van have been largely dealt in at 6 to 7, and close 5½ to 6. Van, 24 to 26; Leadhills, 3½ to 4; D'Erésby Mountain, 55 to 65; West Chiverton, 13 to 13½; Great Laxey, 19½ to 20½; Roman Gravels, 8 to 8½; Rookhope (Lead) firm at 17s. to 19s.; Grogwinion, 3½ to 3¾; Richmond, 9½ to 10¾; Eberhardt, 5½ to 6¾.

Registration of New Companies.

The following joint-stock companies have been duly registered:—

D'ERESBY CONSOLS MINING COMPANY (Limited).—Capital 12,800*l.*, in 10*l.* shares. To acquire mineral property on the Gwydir Estate, parish of Llanroch, Carmarthen. The subscribers (who take one share each) are—S. W. Daukes, the Knoll, Beckenham, 20; J. Y. Watson, St. Michael's-alley, mineowner, 20; N. F. Watson, St. Michael's-alley, shareholder, 50; J. Y. Watson, jun., 26, Austin-friars, stockbroker; H. J. Dean, St. German's-road, Forest Hill; J. Foster, 1, Newington Green-road, agent; J. E. Staple, Pinner's Hall. The directors are—Messrs. S. W. Daukes, J. Y. Watson, and Robert Spence, the qualification being the holding of 20 shares.

SCARBOROUGH, QUEEN'S PARADE, TRAMWAY COMPANY (Limited).—Capital 3500*l.*, in 5*l.* shares. To construct a tramway along the Queen's Parade, Scarborough. The subscribers (all of Scarborough) are—W. Taylor, 50; G. T. Brown, 56; Ponett, 50; W. Baring, 20; R. Swift, 20; B. Fowler, 10; Robert Fowler, 10.

NEW DIRECT SUPPLY AND TRADING ASSOCIATION (Limited).—Capital 20,000*l.*, in 1*l.* shares. To carry on the general business of a co-operative store. The subscribers are—G. E. Roos, 107, Cannon street, 250; J. E. J. Home, 13, Upper Albany-street, Northampton square, 50; R. L. Steward, Orchard House, Sunbury, 250; W. C. Hall, Upper Thames-street, 250; Mark Darton, 93, Gracechurch-street; T. G. W. Westmoreland, Carshalton, 1; E. G. Thompson, 166, Hanover-street, 1.

WEST AUCKLAND BREWERY COMPANY (Limited).—Capital 29,900*l.*, in 11*l.* shares. To carry on business as brewers at West Auckland. The subscribers are—W. Standish, Darlington, 20; H. Rudd, Thirk, 50; R. Nelson, Bishop Auckland, 10; W. J. Cummings, Bishop Auckland, 10; G. Stillman, Bishop Auckland, 1; T. Whithfield, Bishop Auckland, 30; G. Stillman, Bishop Auckland, 1.

CHAPMAN AND COMPANY (Limited).—Capital 3000*l.*, in 30*l.* shares. To take over the business of Messrs. Chapman and Co., of Little Peter-street, Manchester. The subscribers, who take one share each, are—Alfred Butterworth, Oldham; A. W. Henry, Barton upon Irwell; W. G. Page, Higher Broughton; C. F. Allison, Urm-ton, near Manchester; H. Ainley, Oldham; J. C. Peacock, Urmston; T. Thompson, Hollinwood.

TRAFALGAR WORKS (Limited).—Capital 5000*l.*, in 10*l.* shares. To take over the Trafalgar Works, Old Kent-road, and carry on business as India-rubber manufacturers. The subscribers, who take one share each, are—S. H. Mountain, 24, South street, E.C.; W. Meher, 86 and 87, Gracechurch-street; J. H. White, 28, Burdett-road; A. C. Bradshaw, Leytonstone; D. W. Weller, 76, Albany street, E.C.; J. Nevile, 4, Horton road, N.E.; C. B. Williamson, Hill-street, Berkeley-square.

LONDON STOCK BRICK COMPANY (Limited).—Capital 20,000*l.*, in shares of 5*l.* each. To acquire the right and title of W. Wheldon and C. Phillips in the chalk, clay, sand, and other minerals under lands at Bridgemarsh Island, Essex. The subscribers (who take one share each) are—C. Phillips, 115, Cannon street, brickmaker; P. J. Lourey, 61, Hackford road, clerk; W. Wheldon, 26, Martin's lane, engineer; T. Jervis, 3, King street, Cheapside, secretary; W. R. Lacey, Clapham, contractor; T. Grover, Bridgemarsh, manager; R. E. Tyler, 16, Carolean-street, Bedford-square, architect. The directors are—Messrs. R. E. Tyler, T. Jervis, and W. Wheldon, the qualification for any future director being the holding of shares to the value of 250*l.*

F. FAUCHEUX ET CIE (Limited).—Capital 10,000*l.*, in 5*l.* shares. To carry on the business of F. Fauchaux and Cie, of Deal, dealers in preserved food. The subscribers (who take one share each) are—R. Greherton, 14, Church-terrace, Lee; H. Thurnburn, Russell-road, Kensington; F. Fauchaux, North End, Deal; H. Brown, New Malvern; E. Bartlett, Laurel Cottage, Lower Norwood; S. G. Spear, 175, Highbury New Park.

EXETER SHIPPING INSURANCE ASSOCIATION (Limited).—The company is "limited" by guarantee to 5*l.*, the object being the mutual insurance of ships belonging to members. The subscribers are John Holman, 23, St. Mary Axe; W. J. Jones, Teignmouth; John Temple, Teignmouth; J. Drew, Teignmouth; T. W. Hutchins, Teignmouth; J. W. Matthews, St. Mary Axe; R. Berry, St. Mary Axe.

DOMESTIC CO-OPERATIVE COAL COMPANY (Limited).—Capital 1000*l.*, in 1*l.* shares. To supply coal on co-operative principles.

Mining Correspondence.

BRITISH MINES.

ABERDAUNANT.—S. Toy, March 20: In the 15 we have now cut into the lode 8½ ft. It still continues blue, and of a kindly appearance. We are occasionally meeting with small ribs of lead. The ground is very hard for cutting as far as driven. There is no sign of the north wall of the lode as yet. All other works are going on as usual.

ASHTON.—John Craze, March 21: Not much has been done in the 60, east of boundary, since my last, consequently I have no change to report. We have set the driving to two men, at 6*l.* per fathom. The following tribute pitches have been set to 22 men. Terns—takers to tram their stuff to lode, and to pay 10*l.* per ton towards dressing east.—Two men in the back of the 50, east of boundary, at 3*l.* 10s. per ton; two men in the bottom of the 40, east of Browne's, at 4*l.* per ton; two men in back of the 50, east of Mawr, at 7*l.* per ton; two men in the back of the 50, east of Mawr, at 7*l.* per ton; four men in the back of the 20 south, on north and south lode, at 6*l.* 7s. 6d. per ton; two men in the back of the 20 south, on north and south lode, at 6*l.* 5s. per ton; two men in the back of the 20 south, on north and south lode, at 6*l.* 10s. per ton; two men in the bottom of the 8, south of Gundry's, at 6*l.* per ton; two men in the adit north of Lindow's, at 6*l.* 10s. per ton. The highest bidder for the parcel of lead (30 tons), for sale on the 16th inst., are Messrs. Walker, Parker, and Co., at 10*l.* 10s. per ton; and for the 20 tons of blonde, Messrs. Walker, Parker, and Co., at 11*l.* 7s. 6d. f.c.b. We shall ship 35 tons of lead at the same price if Messrs. Walker, Parker, and Co. will accept the extra 5 tons.

BEDFORD UNITED.—R. Goldsworthy, W. Phillips, March 21: The winze from the 127 is communicated with the 138 fm. level, and will be completed to-morrow. The men have now commenced to take down the lode in the 138 fm. level east, and as far as seen it still maintains its former size and value. Saturday being setting and pay, a full report shall be sent you next week.

BETWYS Y COED.—H. T. Hale, March 18: The shaftmen are again at work in the bottom; they have not taken down any of the lode since my last. The lift works well; I hope now to get down for another level without any hindrance.

THE CROWN.—W. Williams, March 21: Not much has been done in the 60, east of boundary, since my last, consequently I have no change to report. We are looking just the same as reported at the meeting, except the 40 east of cross-cut south, on the north lode, which is looking better, and producing a little tin.

GAWTON COPPER.—R. Rowe, G. Rowe, jun., March 16: The lode in the 82 cross-cut is cut into 15 ft. wide. The last 5 ft. of this drive is principally arsenical mundic and spar, mixed with ore. The part now in the end is hard capel and spar, spotted with mundic. We now purpose to resume the drive of the 95 east, where the ore bearing part of the lode is from 6 ft. to 8 ft. wide. The lode in the winze sinking below the 105 is worth 2*l.* per fathom. The drayage of the 117 is continued on the floor of the lode, the capel or south part has not been taken down. The tribute payment is without change.

EAST WHEAL LOVELL.—R. Quenstrail, March 20: The mine throughout is looking just the same as reported at the meeting, except the 40 east of cross-cut south, on the north lode, which is looking better, and producing a little tin.

GAWTON COPPER.—R. Rowe, G. Rowe, jun., March 16: The lode in the 82 cross-cut is cut into 15 ft. wide. The last 5 ft. of this drive is principally arsenical mundic and spar, mixed with ore. The part now in the end is hard capel and spar, spotted with mundic. We now purpose to resume the drive of the 95 east, where the ore bearing part of the lode is from 6 ft. to 8 ft. wide. The lode in the winze sinking below the 105 is worth 2*l.* per fathom. The drayage of the 117 is continued on the floor of the lode, the capel or south part has not been taken down. The tribute payment is without change.

GLENROY.—R. Rowe, March 19: I do not see any alteration in the shaft since last week; the lode continues large, with stones of blonde, and the men are sinking well. We sampled 26 tons of blonde to-day.

GORSEDD AND MERLYN CONSOLS.—W. Edwards, March 21: There seems very little doubt that the lode we have intersected in the eastern level, from the new shaft, will prove more valuable than the one we have been working upon during the past few months. The probability is that this is the Merlyn lode we have intersected. We find its course further south than at first anticipated, so that the two cross-cuts which we have put out from the lower levels have not yet reached it, and in driving east on our course we have been raising during the past fortnight splendid lead ore, and the ground is easily driven through. In the bottom level west, on the old lode, the ground keeps hard, but the lead improves. We are making good progress on the washing-floors, and the mine throughout looks very well.

GREAT DYLIFFE.—Evan Evans, March 20: The stopes over the 132 are not looking so well this week as they have been for some time, worth about 8 cwt. per fathom. Under the 95 east we have a stope worked by six men, and is worth 25 cwt. per fathom. The stope No. 1 over the 95 east is worked by 1*l.* men, and is worth about 1*l.* ton per fathom. The stope No. 2 over the same level is worked by eight men, and worth about 15 cwt. per fathom. In the drivings on the new lode we have a nice bunch of lead in the forebay to-day; the character of the lode at this point is bony, owing, we believe, to the nature of the ground. The 105, east of Bradford shaft, on Llechwedd's lode, is still looking very good; the driving on the lode to the west of cross-cut will be held to the old level about tomorrow, when we shall be able to commence stowing this ground; we cannot value this end to-day, the ventilation being very bad. We could not strip the lode without hindering the driving, but shall be able to do so in a day or two. We are also this week doing all we can to rise the water from the 125 20 fms. deeper than our present driving, which level we believe we can open to this ground with less expense than the 115, and at the 125 we expect that this ore ground will be very long, about 20 fms. longer than at the 105.

E. Evans, March 21: We have sampled to-day 40 tons of lead ore, for sale on the 25th instant.

GREAT HOLWAY.—John Harris, March 21: I do not think there can be any doubt about our having proved from the level engine-shaft the existence of the Holway lode running eastward through entirely virgin ground, although our operations have been limited to present on our course, still you would be pleased to see the lumps of lead-stuff that we have taken from it already; the lode is fully 4 ft. wide, and is worth 12*l.* per fathom.

GOVETT'S Y COED.—H. T. Hale, March 18: The shaftmen are again at work in the bottom; they have not taken down any of the lode since my last.

COMB MARTIN.—J. Comer, March 21: In the 28 west of cross-cut with 2*l.* of ore, and spar, mixed with ore, and ore, and likely to improve. No other change in the ends. The stones and pitches continue to look very well in the same value as last reported. We are preparing to lay down roadway from new shaft to the dressing floors, bring in the ore drawn up through that shaft. This will soon be the principal driving shaft. All the machinery and pitwork is now in good working order, and all points of operation are being pushed on as fast as possible.

Glasgow CARADON CONSOLS.—W. Taylor, W. J. Taylor, March 18: No change in the sinking of Elliott's shaft, which is being pushed on as fast as possible.

GORSEDD AND MERLYN CONSOLS.—W. Edwards, March 21: The ground in this level is still very favourable. The winze in the bottom of the 75, a few fathoms before the 60 east, is not looking quite so well, but worth 12*l.* per fathom.

GAWTON COPPER.—R. Rowe, G. Rowe, jun., March 16: The lode in the 82 cross-cut is cut into 15 ft. wide. The last 5 ft.

but I hope by to-morrow night to have the shaft in fork and sinking resumed. The drivage in the 24 west has for this reason been somewhat retarded. The end to-day is in a kindly lode, containing very fine stones of copper, and I look for a great improvement in a few fathoms further driving; in fact, a rich lode ahead, in my opinion, is a certainty, as the winze in course of sinking below the 12, 3 fms. in advance of the end, is in rich lead. The 12 west is in a large loose lode. The 12 cross cut, towards the north lode, continues in a similar character rock to that reported last week—a light blue killas, very favourable for the production of mineral in large quantities. The intersection of the north lode is a matter of great interest and importance, for should it prove rich (as in all probability it will, as it is in the same channel of ground where the main lode makes rich), the value of the mine cannot be over-estimated. The distance driven has been somewhat disappointing, as it was supposed when the cross-cut was commenced to be much nearer than it has since proved to be. The 12 east, stopes, on junction, has fallen off somewhat in value, and the length of the bunch of ore, moreover, becomes shorter as we go up. This is to be expected, as the course of ore is much richer as depth is obtained, and is twice the length at the 12 it was in the adit, and I expect it to increase in a corresponding ratio at the 24. No other change in the other stopes to notice; the whole are worth in the aggregate 40/- per fathom. The eight men stoping on the junction have broken during the last two months about 250/- worth of ore. I purpose sampling another parcel of lead (10 tons) on the 30th inst., being the third lot which will have been sent away since Jan. 1, and this, too, when our reserves are constantly being added to. The ore is of first-rate quality, and I hope we shall this time get a somewhat higher price than the 12, 10/- paid for the last parcel, which is more than 5/- per ton less than the highest price our ore realises, although even this is much higher than the general run of adjacent mines. The excavations for new wheel-pit, and also new road, in a very forward state. At the new reservoir on the head water of the River Lerry I am glad to report uninterrupted good progress; when completed, it will be of inestimable value to our mine.

NEW BRONFLOYD.—T. Kemp, March 21: No. 3 Shaft—North Lode: The

lode in the 121 end, west of shaft, maintains its productiveness, and is equal in value to last report. I am pleased to say we are opening excellent stoping ground here, but owing to the extreme hardness of the lode carried by this driving slow progress is being made. In order to facilitate this work I have given the men instructions to turn the drivage more to the north, where I think the ground will prove to be more favourable, the object of which is to communicate with the winze that is being sunk from the 110 at the earliest date possible; we have about 2 fathoms further to extend this level to get under the point of the said winze; after the communication is effected we can strip down the lode to greater advantage. The winze from the 110, above referred to, as stated in former reports, is being sunk in the country on the north side of the lode, and when blasting near the lode the same is exposed, which is showing a fine appearance, and I am fully satisfied that the winze is going down on the back of a fine course of ore.—Curtis's Cross-cut—Middle Lode: From the appearance of the ground in the ends of this cross-cut south in the 73 east, and also from dialling, I am inclined to think it has passed through the lode. I have brought the men back some little distance from the forebreast, and put them to drive east, where the lode is composed of killas and spar, carrying strings of ore, and hoping it will soon enter the rich deposit of mineral gone down in the sole of the 52, over this point. The lode in the 52 end, west of Lloyd's cross-cut, is a little disordered, consequently is not producing quite so much ore. All other points of operation are without change. Biddings for 25 tons of silver-lead ore will be due at the office on Saturday next (the 23rd). Hauling and dressing going so fast as the nature of the work will admit.

NEW SOUTH MERRILYN.—R. Rowlands, March 22: Acting on your instructions, I have let the 30 level south to drive or rise at a tonnage rate for lead. At our other operation north we are looking very promising.

NORTH HENDRE.—G. Ellis, March 15: Adit Level: This level has been completed up to the No. 2 shaft by twelve men, and they have commenced the erection of a wharf in the above shaft, for the purpose of clearing the level to the end, and allow of some trials being made therein.—North Level: Six men have been engaged in driving this level, and have advanced 20 ft. I am pleased to say that we have had an improved change of ground, composed of strings of lead and blende running east and west; these are very promising, and continue to improve as we advance. I have every reason to believe that we shall soon have a good lode here. Six men have been stoping in the bottom, west of the level, so as to get the wagons to the forebreast, and take the head, &c., away. Within this last fortnight this portion of the mine has improved very much, and there are many indications that it will open out well.—East of South Level: Twelve men have been employed in this level a portion of the month, but had to cease working in consequence of the breaking of the pulisometer. The north and south ends have much improved, more especially the north cross, the bed of ore here being 4 ft. thick. The south cross-cut is widening, and producing more lead. I anticipate being able to resume operations early next week, after the Alpha patent pumping engine has removed the water, which I believe it will have accomplished before that time.—West Workings of the South Level: Six men have been at work here, making room for the extension of the incline, so as to obviate wheeling, which is expensive and slow work. I am now waiting for the rails to complete this, which I trust to receive at once, so as to save the expense incurred in wheeling, and also reduce the cost of trammimg from 12s. to 10s. per score. There are 38 men raising ore in this part of the mine at 20s. per ton, and I am happy to say that it is as good in quality as usual.—Settings: The north level to six men, at 10s. per yard. West of ditto to stopes by six men, at 25s. per yard. South of east level to six men, at 10s. per yard. North of ditto to six men, at 35s. per yard. Set 35 men to raise lead ore west of south, at 20s. per ton. Tramming staff to twelve men, at 12s. per score of kibbles. I am happy to say that the mine throughout is looking very well indeed, and the discovery of lead and blende in the north has greatly improved the prospects, and augurs a prosperous future.—P.S. The Alpha patent pumping-engine was put in operation at 7:30 last evening, and I beg to say that I am highly pleased with it. The quantity of water continually flowing from it is wonderful, and its compactness, non liability to get out of order, and economy of steam, makes it peculiarly suitable for mines. The fact of the cylinders revolving makes it very suitable for ventilating the workings when pumping or winding. I expect that with 18 hours constant working the whole of the water will be pumped out of the east end working.

—March 18: I attended the Holywell sale to day, and regret to say that prices were exceedingly low. I sold to Messrs. Walker, Parker, and Co. 100 tons, at 11s. 16d. per ton, and to Mr. Adam Eyston 100 tons, at 11s. 8s. 6d. per ton.

NORTH LAXEY.—John Sowden, March 19: The stopes in the roof of the 110 is worth 1/2 ton of lead per fathom. In the 84 end the lode is improving; now 1 ft. wide, and to day there is a small branch of lead seen in the end, and we expect a further improvement, as the end will soon be under the run of lead ground gone down from the level above. The 60 stop is worth 3/4 ton of lead per fathom.

PANDORA.—H. Nottingham, March 21: New Lode: The 33, driving south of Pyne's shaft, is advancing in a good course of ore, worth fully 1 1/2 ton of lead and the same of blende per fathom, with a part of the lode standing on the footwall side, so that we cannot say yet how wide the lode is here. The end has also become very wet, and consequently slow of progress. Nos. 1 and 2 stopes over the 23 south are equal to last valuation, and the lead ground is lengthening to the south as we go up. The 13 driving south is still unproductive, and no doubt will be till we reach No. 2 run of ore; indications are not wanting that we are approaching this, and I expect another month will see this realised. Goddard's Lode: The 33 going south from shaft cross cut is now in a strong lode, mixed all through with blende, and showing but little lead at present; the ground here is similar to what we had at the 23 above before entering No. 1 run of ore, and this strengthens my opinion that this ore is yet before us. This level going north continues to look well; this driving has yielded for the distance driven north of cross cut 2 tons of lead and 1 ton of blende per fathom, the lead here being very soft and rich. Both of these ends are extremely wet, as the whole of the water is pouring down from the roof overhead, so that we are obliged to put sheet-iron for the men to work under. The 13 end south is suspended, and the men are brought back to sink a winze on No. 1 run of ore. We find the lode is being drained by the 33 at this point, so that I am in hopes of being able to put on a full set here next week; the lode here is worth 25 cwt. of lead and 1 ton of blende per fathom. The 23 driving north is not looking so well, but this must improve again, as we have better ground before us. The stopes over mid-level, south of junction, is yielding blende chiefly—(say) 1 ton per fathom and a mixture of lead. The stopes under the 60 maintains its former valuations, but the ore ground here is nearly exhausted.—Surface: We are making fair progress in dressing, and have the floors well stocked with staff. Samples have been sent out for 30 tons of blende to be sold on the 25th inst.

PATEY BRIDGE.—C. Williams, March 21: The Rake vein in the 30 east has improved very considerably during the last three days, being from 6 ft. to 7 ft. in width, 3 ft. of which is a solid course of lead ore, worth from 6 to 7 tons per fathom, and the most important feature in connection with this rich discovery is the long length of unexplored ground before us, and the great height of backs (35 fms.). The same vein in the 30 west is beginning to show strong indications of a rich deposit of lead ore in front of the end, being from 7 ft. to 8 ft. in width, and worth 10 cwt. of lead ore per fathom. The two stopes in the back of the 30 east are worth 2 tons of lead ore per fathom. The tribute pitches, four in number, are producing fair quantities of lead ore, and the men are making good wages. Dressing and smelting lead is being carried on regularly; machinery in a fair state of repair.

PEDN-AN-DREDA.—W. Tregay, March 21: The lode in the 140 west end is worth 20/- per fathom. All other points producing as usual.

PENNAST.—March 21: I have had the engine shaft cased and divided, and the winding-bucket brought to the bottom of the mine, and have commenced driving both east and west at the 133 yard level, so you see we have made very good progress in this operation since my last report. In the 80 west we are entering a shoot of carbonate, and the end looks very favourable. I have dialled the course of the south lode, and find that we have a greater distance to go with the cross-cut before intersecting it; we shall urge the point on as fast as possible. The stopes in the back of the 80 east is yielding good samples of mineral, and I am glad to say that in the back of the 60 east the stopes have greatly improved both for carbonate and lead. Our deliveries from the dressing-door are likely to much improve.

PLYN-LIMMON.—John Garland, March 20: On Friday last we set the 33 to drive east of Jones's winze, to six men, at 12/- per fathom, and the same level, west of Herbert's winze, to six men, at 14/- per fathom; in these two ends the lode is large and open, but poor. I hope to effect a communication here in about a fortnight. In order to facilitate this work the 36, east of Herbert's winze, has been suspended for the time. In the present end the lode presents a very promising appearance, worth fully 1 ton of lead ore per fathom. The dressing of another parcel of lead ore is being proceeded with.

PRINCE OF WALES.—J. Andrews, March 20: The lode in the deep adit end, west of Vigar's shaft, is small, but it yields some good arsenical muriate and earthenware of iron. The lode in the shallow adit end west is 6 in. wide, composed chiefly of quartz, capel, and muriide.

ROMAN GRAVELS.—A. Waters, March 21: The various points throughout the mines are looking as for some time past. We have to-day sold 180 tons of lead ore, realising 20/22/-; and 30 tons of blende, realising 11s. 10s.

SAINTY PATRICK.—William Francis, March 20: The ore continues in the cross-course on which the 120 yard cross-cut is being driven north, in the same mineral compounds, with a firm heading side, and speedy ground for driving. The 60 cross-cut north, in the chert, is a little easier, and good progress is being made in both drivings.

SOUTH CONDURROW.—Wm. Rich, Wm. Williams, H. Abraham, March 20:

The 93 end, west of King's, is worth 7/- per fathom. The 93 east is worth 9/- per fm.

The 90 east is worth 8/- per fathom. The 70 west is worth 10/- per fathom.

The rise in the back of the 70 is up about 14 fms.; the part of the lode carried in the Plantation shaft, is worth 30/- per fathom. We have suspended the 50 end west for the present, and put six men to force on the winze, so as to communicate with the rise in the back of the 60; the lode in the winze is worth 40/- per fathom.

The 80 end, east of King's, is worth 8/- per fathom. We hope to hole the winze

in the bottom of the 40 in a few days; the lode is worth 12/- per fathom. The 40 west is worth 9/- per fathom. The ground is favourable for driving in the 30 cross-cut north. The Plantation shaft is sunk deep enough for a 50 fm. level; we have not yet intersected the lode in this shaft, but hope to do so shortly. We sampled yesterday 23 tons of copper ore.

SOUTH DARREN.—H. James, March 21: The lode in Bishop's shaft is of a most promising description, now producing saving work for the dressing floors. In the 100 end west the lode is worth 10/- per fathom. The winze in the 90 is worth 45/- per fathom. No further change in the forebreast of this level since my last report. The stopes in this level are worth on an average 25/- per fathom, per fathom. The lode in the 80 has been stripped up to the forebreast, and for the piece taken down is worth 32/- per fathom; the lode in the extreme end is at present very much disturbed by an open cross-joint, but from appearances I think it will resume its former productiveness after we have driven through the influence of the above joint. The two stopes in this level are worth 10/- per fathom. The 40 tons of silver lead ore sold on March 16 realised 66/-.

Machinery working well,

SOUTH DE ERESBY MOUNTAIN.—Thomas Bennetts, March 23: The men are making fair progress in driving the cross-cut from the engine-shaft to No. 2 level, and I am glad to say that we are meeting with good faces of lead in the cross-cut dropping towards the lode, which is a good indication of meeting with a good lode when intersected. The lode in No. 2 adit is still in disordered ground, but I am glad to say that it has a much better appearance to-day, and I expect to get into good lead ground shortly.

SOUTH MOLTON CONSOLS.—T. Harris, Thomas May, March 21: The lode in the 22 south is 4 ft. wide, containing spots of lead, associated with beautiful prian. We have suspended driving the 12 end south, and put the men to drive east on the east and west lode, in order to see if we can intersect our north and south lode, which we hope to do very shortly. We shall put two men to costean for ore on the north and south lode, about 80 or 90 fms. south from the 12 fm. level cross-cut.

SOUTH ROMAN GRAVELS.—March 21: Shovel Deep Adit Cross-Cut: I have

put two men to drive north on No. 1 branch or lode. We sunk a shaft at surface 4 fms. on this in May, 1872, but had to abandon it in consequence of water. In 1873 we intersected it in the deep adit cross-cut, where we met with a strong feed of water. It was then believed we bled the water from the 40 south at the Roman Gravels, as that level became dry a few days below we crossed the joint. I would here remark that two shafts were sunk on this lode by former companies, but I do not know with what result. I have also started two men to drive north on the No. 2 branch 11 fms. behind the fore-end. This branch is about 3 in. wide, containing lime, spar, and nice shods of lead ore.

SOUTH TOLCARNE.—William Rich, James Knotwell, March 20: The boundary shaft is being sunk on the 30 by six men. The lode in the bottom is increasing in size, and carries a little tin. The lode in the 30 end has a promising appearance. We sampled yesterday 7 tons of copper ore.

TANNSERVILLE.—Arthur Waters, March 21: We have to-day sampled 100 tons lead ore for sale next week. No change in the mine worthy of notice since last week.

TOLGUS CONSOLS.—W. C. Vivian, March 21: I find to-day that the 40 cross-cut north has been driven rather more than half the distance which I calculated would be necessary to reach the lode. The rock in the present end is as favourable as we have ever had for progress.

TREBEIGH CONSOLS.—J. Gifford, March 21: In the 45 fm. level east the lode is 2 ft. wide, principally killas, with a small flockan on the footwall. In the cross-cut south of the engine, at the 45 fm. level, driving on a small branch, running about 30° west of south, and underlying west a little, we broke some small bits of lead and white iron yesterday. Whether this is the north and south lode, which is said to pass near our shaft, I cannot say; but driving on it will prove it, as also if the branch seen in the shaft at the 30 fm. level holds down.

No improvement in the 45 west.

TRELEIGH WOOD.—W. Goldsworthy, March 21: There is no change to call any remark since my report for the meeting.

TYN-Y-FRON.—E. Jones, March 19: We have discontinued the cross-cut driving south, as we have not come upon the south lode where we expected; and from a branch or lode we find 11 fms. east of this, running about 14° south of east, we think it probable that this has influenced and carried the south lode further south than its position would be according to its bearing west. We shall resume our drivage east on the main lode, on the south part of the lode, where we have the course of lead ore, as by driving in that direction we shall be gaining greater backs, and laying open the mine and ore ground for stoping.

WEST ASSHETON.—John Craze, March 21: In the 60, west of boundary, we have cross-cut into the lode in this end 6 ft., which is composed of lead, blende, and spar of a very promising and kindly appearance. The copper lode still remains south. We pricked into it about 9 in. or 1 ft., and it shows very nice copper. The men have now resumed driving at 6/- 10s. per fathom; the part of the lode carried, about 3 1/2 ft. wide, is producing fully 30 cwt. of lead and the same quantity of blende per fathom, with every indication for a still further improvement. We have set the following pitches for lead ore on the following conditions—to tram all the stuff to the lode, and to pay 10/- per ton towards the dressing expenses:—Four men in the back of the 60 west, at 2/- 15s. per ton. Two men in the back of the 60 east, at 4/- 5s. per fathom. Two men in the back of the 60 west, at 5/- 5s. per ton. Two men in the back of the 60 east, at 6/- 10s. per ton. We also have another pitch ready for the men in the back of the 60, which we shall set as soon as we can get men; the price will be from 4/- to 4/- 5s. per ton. The pitches, on the whole, are looking exceedingly well. The highest bidders for the 20 tons of lead are Messrs. Walker, Parker, and Co., at 10/- 10s. per ton f.o.b. The highest bidders for the blende (10 tons) are Messrs. Kenrick and Sons, at 1/- 17s. 6d. per ton. We shall ship 25 tons of lead at the same price if Messrs. Walker, Parker, and Co. will accept the extra 5 tons.

WEST GODOLPHIN.—John Pope, March 20: There is no change in the mine worthy of remark since last report. We sampled our copper ore yesterday, containing 24 tons. A full report will be forwarded in time for the committee meeting on Tu-24 days next.

WEST KOSKEAR.—H. Stephens, W. Bennettts, March 21: The lode in the 12, driving west, is fully 6 ft. wide, intermixed with copper ore throughout; a very promising lode indeed. The masons are progressing with the new engine-house exceedingly well, and if the weather continues fine we have no doubt of having the house in readiness to commence the erection of the engine quite a fortnight earlier than is specified in the contract.

WEST TANKERVILLE.—Arthur Waters, March 21: We have to day sold 10 tons of lead ore for 44/-.

WEST WHEAL TOLGUS.—March 20: The ground in Taylor's shaft is much the same as for some time past. As the men are regularly at work in the bottom of the shaft a little better progress is being made in sinking. The lode in the 145 end west is harder than when last reported, with less ore, but it is widening; the north wall is gaining north, and the ground by the side of it is soft white killas, precisely the same kind of ground we had by the side of the great bunch of ore in the 135 to the west of No. 1 winze, below the 135. The lode in No. 2 winze appears to be keeping its width. Since our report last week the men have been sinking in the south part of the lode. There is very little underlie to the south wall, and the winze quite dry, which seems to be in favour of the lode being productive. We cannot value the winze now to be yielding more than 6 tons per fathom, but when the north part is taken down it may give a better appearance. The lode in the 135 end west is 4 ft. wide, with a little ore scattered all through it; we are glad to see there is water in the lode, and it is increasing. The stopes in the back of the 135 are yielding very well. There has not been any lode taken down in the 125 end west since last report. We have just cut a strong stream of water close to the end, so we shall now take down the lode. There is no lode met with yet in the 125 cross-cut south. There is no alteration to notice in the bar-gains at Richard's shaft. We sampled 39 tons of ore yesterday as estimated.

WHEEL CREBRO.—J. Andrews, March 19: There is no change in the mine since the general meeting held last Thursday.

WHEEL KITTY.—St. Agnes.—Stephen Davey, R. Harris, March 18: There is no change worthy of special remark in either of the bargains this week.

WHEAL MARY HUTCHINGS.—Henry Miners, March 20: The result of the furnace which was put to work about 10 days ago for calcining the stamps mundis is answering very satisfactorily indeed, and we have during the last fortnight commenced and completed the second, and have also lighted the fire in that to prepare for burning to-morrow (Thursday), therefore we may fully expect from the result of the one that our next cleaning-out will show a good return. The lode is still looking well.

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The Mining Market: Prices of Metals, Ores, &c.

METAL MARKET—LONDON, MARCH 22, 1878.

IRON.	£ s. d.	£ s. d.	TIN.	£ s. d.	£ s. d.
Pig, G.M.B., f.o.b., Clyde.	2 11 1	—	English, ingot, f.o.b.	69 0	—
" Scotch, all No. 1.	2 12 6	3 10 0	" bars	69 0	—
Bars, Welsh, f.o.b., Wales	5 5 0	5 10 0	" refined	70 0	—
" " London	5 15 0	6 0 0	Australian	64 0	—
" " Sydney	7 0 0	8 0 0	Banca	65 0	—
" " Tyne or Tees	5 10 0	5 15 0	Straits	64 0	—
" " Swedish, London	9 15 0	10 0 0	COPPER.		
Rails, Welsh, at works	5 0 0	5 2 6	Tough cake and ingot	69 0	—
Sheets, Staff., in London	8 10 0	—	Best selected	71 0	0 7 10 0
Plates, ship, in London	7 0 0	7 5 0	Sheets and sheathing	74 0	0
Hoops, Staff.	7 15 0	8 0 0	Fiat Bottoms	75 0	0
Nail rods, Staff. in London	6 10 0	7 0 0	Wallaroo	74 10 0	—
STEEL.			Burra, or P.C.C.	72 10 0	73 0
English, spring	13 11 0	19 0 0	Other brands	69 0	0 70 0
" cast	30 0	40 0	Chill bars, g.o.b., nom.	64 0	—
" keg.	15 10 0	—	PHOSPHOR BRONZE.		
" fag. ham.	16 0 0	—	Bearing metal	2112 0	0
LEAD.			Other alloys	£120 0	0 140 0
English, plg, common	17 10 0	17 12 6	BRASS.		
" L.B.	17 15 0	—	Wire	84 1/2 d.	—
" W.B.	18 10 0	—	Tubes	104 1/2	—
" sheet and bar.	19 0 0	—	Sheets	95 1/2	—
" pipe	19 10 0	—	Yel. met. sheath. & sheets.	64 1/2	— 6 1/2 d.
" red	20 0 0 20 10 0	—	Nails composition	84 1/2	—
" white	27 0 0 28 0 0	—	TIN-PLATES.*	per box.	
" patent shot	23 0 0	—	Charcoal, 1st quality	1 0 0	1 1 0
Spanish	17 5 0	—	2nd quality	1 0 16 6	1 1 0
Metal, per cwt.	18 0	20 0 0	2nd quality	1 0 17 0	—
Ore, 10 per cent, per ton	34 0	26 0 0	Black	per ton	16 0 0 18 10 0
FLICKSILVER.			Canada, Staff. or Gla.	11 10 0	12 0 0
Flasks of 75 lbs., ware.	7 2 6	—	at Liverpool	—	
PELTIER.			Black Taggers, 450 of	30 0 0	—
Silesian	18 12 6	—	14 x 10	—	
English, Swansea	21 0 0	—			
Sheet zinc	22 0 0 23 10 0	—			

* At the works, 1s. to 1s. 6d. per box less for ordinary; 10s. per ton less for Canada; IX 6s. per box more than 10 quoted above, and add 6s. for each X. Terne-plates 2s. per box below tin-plates of similar brands.

REMARKS.—The position of affairs generally is unaltered, and there is not the slightest improvement to report in the ordinary demand for any one metal, and we do not see very well how any can be expected yet awhile, for the effects of two gigantic evils, in the shape of war and famine, have first to be overcome, and before that can be accomplished it will absorb a considerable amount of time and money. A great deal has been done in and for India to alleviate the sufferings of the natives, and the relief afforded has doubtless proved sufficient, but beyond this little could be done but to wait patiently for the return of another season, in the hope that it might restore things to their normal condition; everything, therefore, for the present remains in a languishing state, and we can only hope that the new crops when secured will be abundant, and in some measure make up for the previous failures. The Indian trade is also greatly affected by the present low rate of exchange, and the prospect of increased taxation to repair the finances of the exhausted exchequer will not help to improve matters. We can scarcely look for any new or extensive undertaking being put in hand by the Indian Government, and whatever demand may exist will depend chiefly upon the ordinary requirements of the people, who are very much enfeebled by their impoverished condition. The famine in the North of China has produced a very depressing effect upon trade in these parts, and the account recently received of the privations and afflictions of the poor inhabitants is most heartrending. The Cape houses complain more of the loss occasioned by the drought there than from the ravages of the war—the latter may soon be repaired, but the former is seldom to be conquered in much less time than a year. In Ceylon and certain parts of South America the last crops were mostly failures, and the people are not in a position to trade more than to a very limited extent, and to give them credit and press the sale of goods upon them is only increasing their difficulties.

It is very unfortunate that all these misfortunes should happen so closely upon one another, and no short interval of rest given, but perhaps the return of prosperity will be all the greater when it does come, and we shall then appreciate it so much the more. But what are the chances of peace? Because without peace there can be no prosperity, and it is useless to think of better times until peace is secured. Well, there is nothing of a reassuring character as yet transpired to lead us to form a favourable opinion of the political situation of Europe. Great Britain simply asks for the truth to be told, and in this at least we are united, and we believe the request is endorsed by every Englishman, and no subterfuge whatever will satisfy any one of us. We wish for honesty, truth, and justice, and if these principles are not to be upheld it is better that Great Britain declined to enter the Conference.

COPPER.—Holders of Chili bars have shown more disposition to sell, and several parcels of good brands have changed hands at lower rates, principally about 64 1/2 10s. It would have been better had holders commenced to sell earlier, when a larger demand existed for manufactured; however, they will, probably, have no cause to regret the sales just made, for higher prices for some time to come are almost impossible, whereas lower prices are not improbable. Under these circumstances holders have done wisely in effecting sales, and we firmly believe if they should desire hereafter to replace their copper they will experience little difficulty in doing so, on more advantageous terms than previous contracts, and we hope they will be induced to operate again at a more propitious season, with a view to make good their losses. To have withheld their stocks from the market any longer would not only have been foolish and ungracious; and we are sure they will feel greatly relieved in having parted with them. Our market this week has continued its downward course; not only Chilian, but Australian and English have all suffered further depreciation. The Indian demand for manufactured has been very indifferent, partly owing to holidays in Calcutta and Bombay during the fore part of the week, and also from the low rate of exchange, which is considerably interfering with the execution of orders.

On Monday the charters for Chili for the first fortnight of March were cabled as 2000 tons, consisting of 1850 tons bars and ingots, and 150 tons furnace stuff for the United Kingdom, and 200 tons bars for the Continent. The quantity advised is large, considering the previous announcement and the dull state of the market; but, in addition to this, the price comes lower from Valparaiso, which is a move in the right direction. We are, however, great advocates of enhanced prices in good times, but we are strongly opposed to dear prices in bad times, and fittings prices at all times.

Exceptional stages of the market often require exceptional remedies and treatment, and as the present period is one of extreme languor it is necessary to have recourse to extraordinary measures, and administer a strong stimulus in the shape of unusually low prices to restore vitality, as no other remedy will be found nearly so prompt and efficacious, and sellers should readily consent in making the needed concessions. But although we believe we have the vast majority of the trade holding a similar opinion to our own, yet we noted others giving publicity to a totally different one, and we were not a little surprised to read last week in the columns of this Journal a commentary on the eminently truthful circular recently issued by the old established and highly respected firm of Messrs. Rogers, Sons, and Co. We have no doubt those gentlemen will reply to it in an intelligible manner, notwithstanding the bittering epithet introduced as a salve for the opposition expressed to their personal opinion. In justice to Messrs. Rogers, Sons, and Co. we think it right to remark that we entirely concur in their opinion, and we wish others would speak out boldly and impartially as they have done. It is not very easy to follow the train of argument adopted by the correspondent who contributed "The Copper Trade, and its Prospects," for in the first place he states that "everybody acquainted with the feeling now prevalent in the copper market must endorse Messrs. Rogers' words," and then he goes on to try and prove that because the opinion is universal experience shows that whatever is expected by everybody never comes to pass. His explanation is equally puzzling, and we do not see exactly the force of the argument that if the trade has a bad opinion it is badly supplied. As regards the general opinion at the present time, he states that it is a bad one, and about this there is no question, but if he means to assert that we are, or are likely to be, badly supplied it does not apply, and it is altogether an erroneous supposition, and, as figures are quoted in support of his statement, we also give the following figures, to show there is no scarcity or falling off in supplies:

	Tons.
Stocks of copper in Europe and afloat for Europe	March 1, 1878... 47,241
" "	March 1, 1877... 46,141
Total increase	1,100
Actual stocks in Europe	March 1, 1878... 23,305
" "	March 1, 1877... 28,469
Total increase	4,864
Actual stocks in England	March 1, 1878... 20,965
" "	March 1, 1877... 15,379
Total increase	5,586

Whichever way the statistics are viewed, whether collectively or separately, it matters not, for it will be found there is a positive increase, and a very great increase, in the actual stock in England; and, consequently, it is a mistake to state that the consumption during the last 12 months has increased between 7000 and 8000 tons. The fatal mistake which the writer of the before-mentioned article seems to have made is to assume that because the visible stocks at two different periods amounted to about the same the consumption must necessarily be the same. This is an incorrect conclusion to have arrived at, and he should have been guided more by actual stocks, as they form a better criterion of the rate of consumption. What there is in the present year to warrant the expectation that the consumption will be greater than that of last year we are at a loss to conceive, and will leave that subject to the judgment of others; all we can say is that at present we fail to discover any substantial reason for forming such an opinion, but as far as our own personal interests are concerned we only hope it may be true. To rely

upon Russia increasing her demand to such an extent as to cause a diminution in stocks, and higher prices to follow when that country is so much exhausted from the war, and may, perhaps, shortly have the whole of her ports blockaded, is about as feeble a stand as anyone could possibly have advanced. With regard to the English smelters, we are informed they are fully covered, besides they are not at all a speculative body, and are far too cautious to commit themselves to chance by making sales over and above their stocks. Our experience is quite the reverse of that which is attributed to them of overselling, for they have repeatedly refused business instead of accepting it in instances where they could not cover with the raw material; and further than this, they cannot find buyers of manufactured at anything approaching current quotations: 1500 tons of tough cake has just been sold to France at 67s. to 67s. 10s. This will show that the stocks in the hands of English smelters are still large, and that the French demand is now pretty well satisfied. The price for tough is the equivalent of about 61s. for Chili g.o.b. bars. Touching Lake Superior, we hear of large quantities being offered at 76s. c.i.f. Continent, which is the parity of about 77s. 10s., less 2 1/2 per cent, here; and as Wallaroo has recently been quoted as high as 78s. we are inclined to doubt whether 81s. per ton higher was ever declined for a large quantity of Lake.

The production of copper at Mansfield, according to the companies' own return shows no falling off, for in 1870 it amounted to 3800 tons; in 1871 to 6000 tons. The arrivals of Wallaroo since last sale are large, and stocks in importers' hands are estimated over 1800 tons. Other brands of Australian copper have lately been sold from 70s. to 69s., and we are given to understand that there is more to be had at the same price. With reference to the principal importer of Chili, we only hope that whatever copper he may have disposed of it has gone into hands equally strong and capable, and that the market will not suffer by the changing of hands. We never knew the market less "beared" than it is at present, for few are inclined to risk such sales without getting a greater margin than buyers are willing just now to pay.

IRON.—The amount of business transacted in iron at the present time is about as limited as it is possible for it ever to be, and the works were dependent upon the orders received from London we

domestic meets with very little attention, but is quoted at 5s. c. to 5s. c. as to brand.

TIN.—Our market has been tolerably steady, the price of foreign ruling about 63s. 10s. per ton. Holders are anticipating a falling off in supplies from Australia shortly, as the wool season will soon be over, and the heaviest shipments have usually been made at that time, owing to the low rates of freight that are then taken. Sellers, however, should not expect too much just yet in the shape of any improved price or demand. In the first place, trade politices are still unsettled, and may become increasingly serious, and next month will be one of most anxious suspense, and anyone who is not able to bear with a severe reverse should make himself secure before it is too late. We, of course, all hope for the best, and trust that peace will ensue, but we must not allow principle to be sacrificed for gain, even though we have to uphold "right against might" with the loss of blood and treasure. The Easter holidays will also interfere with the ordinary consumption of metals. From New York on March 9 it is stated that there is little or no improvement in the demand for pig, holders present a firm front, and the market, more particularly for Straits, is nominally well sustained, prices for this description being relatively as low or lower here than those current in Singapore and Penang. But buyers point to the yet very considerable supply in prospect, some 20,000 slabs being afloat for the United States.

QUICKSILVER.—The past week has been the exact counterpart of the preceding. On Monday a good business at 7s. whilst on other days 7s. 2s. 6d. was asked, without any sales worth mentioning.

THE IRON TRADE.—(Griffiths's Weekly Report).—Friday evening. The Glasgow market for Scotch pig-iron has been quiet this week, and prices have experienced but little change. To day the market has been firmer, and closes with buyers at 51s. 1/2d., sellers 51s. 2d., a fall in price since last Friday of 3d. per ton. The price at the close last week was 54s. 5d. Makers' iron is unchanged; we quote makers, No. 1: Gartsherrin, 59s.; Colless, 64s.; Oldhill, 59s.; Langloan, 61s.; Sunnyside, 59s. 6d.; Monkland, 52s. 6d.; Glasgow, Glengarnock, 57s. 6d.; Eglinton, 53s. f.o.b. Ardrosson; Shotts, 60s. f.o.b. Leith; Kennie, 51s. 6d., f.o.b. Bo'ness. At Barrow Exchange on Monday hematites were firm, Bessemer iron somewhat easier. The advent of the shipping season will probably cause several furnaces to be blown in, stocks being light. At Middlesborough on Tuesday prices were unsettled, and the market weak, though more business was done than for some time past. The official quotations are no longer maintained, and No. 3 was bought freely at 40s. 6d., and even 40s. The stock in Conna's store here last night was 55,000 tons. It is expected that the men will submit to the reduction of 7 1/2 per cent, demanded by the manufacturers. The quarterly returns issued by Mr. Waterhouse on Tuesday to the Board of Arbitration shows that prices of manufactured iron have receded 3s. 3 1/2 d. per ton, the average for the three months ending Feb. 23 being 67s. 7s. 4d., against 67s. 10s. 7d. for the quarter ending November, 1877.

At Wolverhampton, on Wednesday, the market was firm for manufactured iron, and at Birmingham, yesterday, the same feeling existed. Several large orders for finished iron are on the market for forward delivery at present prices. The sales of pig-iron have not been large or numerous, but prices are firm for all the leading brands. Messrs. Noah Hingley and Sons manufactured and sent out last week over 800 tons of finished iron at their Netherton and Hart's Hill Works. The export of iron and steel rails last month was 32,445 tons, valued at 237,692s., against 17,396 tons, valued at 136,994s., in February, 1877. There is no improvement in the price of tin-plates, and in the metals there is no change.

Messrs. HARRINGTON, HORAN, and Co. (Liverpool).—Arrivals here during the fortnight of West Coast, S.A., produce:—Aconcagua, from Valparaiso, 550 tons bars, 175 tons ingots; Britannia, from Valparaiso, 618 tons bars, 50 tons ingots. At Swansea—Edgar, from Carrizal, 700 tons regulus; Hawkeye, from Toopilla, 453 tons ore, 303 tons regulus; Capricorn, from Carrizal, 535 tons regulus. Stocks of copper (Chilian and Bolivian) in first and second hands, likely to be available, we estimate at—

Ores. Regulus. Bars. Ingots. Barilla.

Liverpool 420 917 12,358 — —

Swansea 2189 535 1,805 — —

Total 2609 6263 14,153 — —

Representing about 17,503 tons fine copper, against 17,418 tons Feb. 23; 14,191 tons March 15, 1877; 11,431 tons March 15, 1878; 11,912 tons March 15, 1875. Stock of Chili copper at Havre, 8700 tons fine, against 12,045 tons March 15, 1877; stock of Chili copper at Hart's Hill Works to date, 11,000 tons fine, against 12,707 tons March 15, 1877; stock of foreign copper in London, chiefly Australian, 5100 tons fine, against 3564 tons March 15, 1877.

According to the Board of Trade Returns, the imports and exports into and from this country for the first two months of the following years were—

Imports. 1876. 1877. 1878.

Copper in ores

the advices, under date Jan. 7 show a loss of 12L 6s. 10d. Javali, 5s. to 7s.; the gold returned for the month is valued at 1400L; expenditure, 987L. The dry season has set in, and no hope of working with water till June or July. From Santa Barbara, the advices show a profit of 324L 3s. 5d. The gold return is 1469L 4s. Eberhardt and Aurora, 5s to 6s; Flagstaff, 10s. to 15s.; New Zealand Kapanga, 10s. to 15s.; New Quebrada, 1s to 2s; Pestarena, 5s. to 7s.; Port Phillip, 10s. to 12s. 6d.; Richmond, 9s to 10s.

The Market for Mine Shares on the Stock Exchange has given evidence of a better feeling, but the amount of business done has not been materially larger. The Ynisedwyn Company, whose prospectus will be found in another column, has been formed with a capital of 60,000L, in shares of 1L, to purchase (in consideration of taking over about 15,000L liabilities, to be paid in cash, and a mortgage debt of 43,750L, which may be paid off gradually, and of paying 3500L in fully-paid shares, making about 62,250L purchase money in all), and work the well-known Ynisedwyn and Abercrae Collieries and the Ynisedwyn Steel and Iron Works in South Wales. The property was, until the recent depression, generally considered as a highly prosperous concern, and no doubt is entertained that upon the revival of trade it will again become profitable. It appears that about 157,000L has been expended on the property and plant, and the valuation of Messrs. Daniel now places it at 137,472L, between which and the 62,250L purchase-money there is a wide margin. It is estimated that even at present prices the annual profit will be (the transfer relieving the concern of financial pressure) over 11,600L, which represents a handsome return upon the 60,000L capital. The Advance Bank, with a capital of 250,000L, in shares of 5L each, is formed to transact the class of business which is at present done by that disreputable class of money lenders who lend on bills of sale and such like, and by certain classes of bill discounters. The cases of Stephen v. Cochrane and Cochrane v. other parties, which have been this week before the courts, show the exorbitant charges made upon borrowers, and also that judges will not willingly sanction extortion of this kind; so that if the Advance Bank be prepared, as it is understood they will be, to make their advances on more equitable terms, and to guarantee greater fairness to the borrower, it is probable that they may find a good field for operations. The Memorandum of Association is so wide that the Bank could do any business whatever in which money, real or imaginary, is employed, so that at least some profitable work ought surely to be found.

Notwithstanding the announcement that the Bank of Bombay has raised its rate of discount from 7 to 8 per cent., the silver market continues inactive, bars remaining unaltered, at 54s. per oz. No decided revival of the demand for silver is expected while the Government drawings in bills on India continue at the rate of 500,000L per week.

The shareholders in "The Brazilian Company" (extinct), erroneously advertised in the Journal of Dec. 29 as the "General Brazilian," are being sought with a view to ascertain whether 18,000L, together with a much larger sum previously received by persons representing themselves as directors of the company, has been distributed among the shareholders. The corrected advertisement appears in another column of this day's Journal.

St. John del Rey, 320 to 325; the telegram received on Monday states that the produce for the first division (eight days) of March was 10,000 oits, the ley of the ore being 6.0 oits per ton, or 7.5 oits per ton, according to the old measurement. The value of this would be about 3875L. The profit for January was 8232L 3s. 2d. The advices state that the gold produced for the month of January, though lower than that for December, may be considered satisfactory. Within the period an unusual amount of low-grade mineral has been treated, consequent on the extension and deepening of the new western sections. The output of mineral (6500 tons) has been large, and the duty per boar fair, considering the nature of the work performed. Mr. Charles W. Williams, of Sierra de Cooas, desires that it may be explained with regard to the statements made with reference to Cuiala at the St. John del Rey meeting, in the Journal of Dec. 29, that the Cuiala Company mentioned, purchased in 1870 property far in excess of that now purchased by the St. John del Rey, which is not a freehold, but part of a property held by other proprietors or owners, and who have as much right to work on any part and at any time as the St. John del Rey Company, under the purchase, which he considers is not a convenient position for the St. John del Rey. Mr. Williams, who was the first to announce the approaching decline in the ley of the ore when it was averaging 10 oits per ton, alleges that the reason of the unfavourable purchase mentioned was that the gentleman who made it was unacquainted with the laws of the country. He adds that there is not a stick of timber on the property, and that the lode, instead of 8 oits per ton, gives as far as seen but 1.5 to 2 oits per ton. The great body of the lode is in freehold parts, which the late Mr. Brown always intended to purchase in partibus or in common with other properties. The parties in possession are, he says, fully aware of their value to the St. John del Rey Company, now they have spent 700L upon them. The mine, he considers, is undoubtedly a good mine, and will pay as well as Morro Velho.

Don Pedro North del Rey, 1s to 2s; the report for January states that the produce from 2567L tons dry weight was 5000 oits, of the value of 2125L, and the aggregate cost was 2647L 12s. 10d. Captain Vivian (Feb. 10) writes with regard to the permanent pumping machinery, that having now matured plans, and should everything go well, especially the old machinery, to enable to fork the water sufficiently low enough below the 35 so as to fix the 15-in. plunger-lift, he sees no reason why the whole of the machinery should not be completed, and commence pumping water some time next month (March). Almada and Tiriti, 1s to 2s; the telegram received on Monday reports an important improvement in Providencia—*"New East lode discovered north in east cross-cut from tunnel; width of new east lode (Providencia) 1 fathom. Ley of ores high; copper; black; looking well; raining."* On Feb. 1 Mr. Breathwaite writes that the extent of payable ground has increased considerably during the past week, but still it must only be regarded as a deposit under the slide, and not as forming a part of the main course of ore for which we are exploring." The next letter (Feb. 8) said "The ore in the Providencia Mine under the tunnel we now know holds down to the 10, and we are opening out at that level for stoping. Next week I hope to send you a sketch of the works south of the slide in the Tiriti, as we have changed the direction of the explorations in favour of a plan, which we hope to make self-supporting at least, if no more." The telegram is, therefore, considered to be particularly gratifying.

The latest advices from Comstock continue to point to the fact that what are known as outside districts are engaging more than ever the attention of the mining public. Some districts are fairly rivaling Comstock itself in the amount of business transacted and enhancement of values. San Francisco capital, with the concentration of the principal mines in the hands of the bonanza firm, is seeking for outside investment, and the result will be the opening up and development of hitherto unexpected treasures. Not a little of the capital is already on its way to engage in extracting the now acknowledged wealth of the Black Hills, and building up the coming territory of Arizona. Meanwhile, the principal mines of the Comstock, concentrated in strong, capable, and energetic hands, will have a new lease of life, and will enter upon a fresh sphere of productive usefulness. There is nothing the matter with the prospects of the mining world for the coming season. The daily yield of the Comstock California is 700 tons, and the Consolidated Virginia 600 tons. The ore-producing sections of the mine are looking well in every part—in fact, there seems no prospect whatever of any decrease of the regular monthly returns of the mine. The mills are all kept busy crushing, and the daily yield of bullion is fully up to the usual standard. The delivery of ore by team to some of the canyon mills has been quite difficult, but the reserves of ore on hand serve to keep all in full operation. Not many men who see the miners of the Consolidated Virginia lifted out at the top of the shaft at change of shift have the courage to descend into the lower regions of that mine. Very few men of the old residents of the Comstock care to descend into the steaming regions below, and not one man in a thousand could be induced to make the trip after seeing the men popped out at the top of the shaft, steaming as though just lifted from out of a cauldron of boiling water. Though they are shirtless—naked as at birth—men must work—the wonder is that they are able to do anything but gasp and pant. It is a place better fitted for salamanders than for men. At the head of the main incline it is as hot as in the hottest vapour bath at Steamboat Springs. One would think that men much in such a place would be quite secure against rheumatism; but for the large quantities of ice-water they drink the men could not endure the great heat in which they are placed or the floods of perspiration poured from their pores. They swallow gallons on gallons of it, and it never hurts them in the least.

Richmond, 9s to 10; the usual weekly telegram from the mine at Eureka state the week's run to have been \$90,000 from 1100 tons of ore. The week's produce of the refinery was \$55,000. The directors announce that the coupons and debentures due on Monday will be then paid at the Union Bank of London. As to the operations at the mine, the jealousy of San Franciscans appears to be getting excited, for a local writer observes—"The Richmond Company refine their own bullion. They have invested nearly \$1,000,000 in providing machinery, buildings, &c., and their process is a French invention, which manager Probert has the exclusive right to use in the United States. It is a losing process, however, for the company, as it is much more cheaply refined at San Francisco and at the eastern refineries. The commission sums required to put it on its present footing will prove almost a total loss." How

far the attempt to refine the "process" at San Francisco would be successful can scarcely be judged of from such an evidently interested authority.

Hultafall, 5 to 5½; the mine continues to open up well. There is a portion of the lode still in the shaft, which is carrying rich ore. The shaft is a perpendicular one, and the lode has been in the shaft for the greater part of the sinking, but is dipping from the shaft. The fact of part of the lode being still in the shaft, and rich ore, speaks well for the course of ore in depth, and also proves its great size. There is no other change of importance in the workings. The dressing machinery has been started, and will be working on ore at the latter part of this week.

The Market for Hydraulic or Gold-Washing Shares has shown more animation, and there has been an enquiry for Blue Tent and Birdseye Creek at quotations. Blue Tent, 3 to 3½; a telegram has been received during the week announcing a further partial clean-up, with a return of \$4700. Work was being pushed on steadily, and everything progressing satisfactorily. Cedar Creek, 3 to 3½; the superintendent advises the first clean-up at Central claim, resulting in a yield of \$6000; this is considered satisfactory. Washing on Baker claim was also progressing well.

Lead Mines have been firmer, with a fair amount of business transacted. Van, 24 to 26; the annual meeting was held on the mine on Wednesday. The details appear in another column. The mine is looking exceedingly well. Grogwinion, 3½ to 3¾; the sale of ore this month is increased to 150 tons, that quantity having been sampled yesterday for sale next week. The mine continues to open out in a productive manner. Wye Valley, 1½ to 2½; good progress continues to be made at this mine. West Wye Valley, 3½ to 3¾; the various stopes maintain their productiveness, and the deep levels are still opening out well, thus increasing the reserves of ore ground. Caron, 2½ to 3½. Mr. Walter Eddy, of Llangollen, has specially inspected the property, and speaks favourably of the mine and its prospects. Good progress continues to be made, and the bottom level is opening out very good ore ground indeed—much better than in the level above. South Cwmystwyth, 3 to 4; this mine has now commenced sales, a parcel of 40 tons of lead having been sampled last Wednesday for sale on the 27th inst. It is intended to follow this up with regular monthly sales, and so rich is the mine said to be, that it is expected the returns will be increased as the ore ground becomes more laid open and taken for taking away. The lead is of rich quality, and is found in large solid ribs—in some places 15 to 20 in. wide—and can be stopped away cheaply. Red Rock, 2 to 2½; excellent progress continues to be made in all the workings, and a good quantity of lead is being raised and dressed. Saint Harmon, 2 to 3; all operations going on well at the mine, and a nice parcel of lead preparing for sale.

Pateley Bridge, 3½ to 4½; the agent advises that the 30 east on

Rake vein has very considerably improved since last report the end now being worth 6 to 7 tons of lead ore per fathom. Other parts of the mine also looking well. West Pateley, 2 to 2½; everything is reported to be progressing satisfactorily. Mawston, 50 to 55; good progress making at the mine, and a parcel of ore being got ready for sale from Wheadley Hill level. Hartington Moor Carbonate, 1 to 1½; this is a small company formed to work some deposits of carbonate of lead in Derbyshire. The mineral can, it is said, be produced cheaply, and requires no dressing. The works have only recently been started, and already sales have commenced, whilst it is expected that after the present month the operations will produce profit.

Subjoined are the closing quotations:—

Ashton, 3½ to 1; Carn Brea, 42½ to 45; Court Grange, 1 to 1½; Devon Great Consols, 2½ to 3½; Dolcoath, 31 to 33; East Caradon, 3½ to 5½; East Van, 6 to 8½; Glenroy, 5½ to 7½; Great Laxey, 20½ to 20½; Hindon Down Consols, ½ to ½; Leadhills, 3½ to 3½; Marke Valley, ½ to ½; Parry Mountain, 3½ to 5½; Pateley Bridge, 3½ to 4; Penstrithal, 4s. to 6s.; Roman Gravels, 8½ to 8½; Rockhope, 2½ to 1; Tankerville, 3 to 3½; Tincroft, 11 to 12; Tyn-y-Fron, 1½ to 1½; Van, 24 to 26; West Ashton, ½ to ½; West Bassett, ½ to ½; West Chiverton, 13 to 13; West Pateley, 2 to 2½; West Tankerville, ½ to ½; Wheal Grenville, 2½ to 3½; Almada and Tiriti, ½ to ½; Argentine, ½ to ½; Birdseye Creek, ½ to ½; Blue Tent, 3 to 3½; Capo Copper, 31 to 33; Cedar Creek, ½ to ½; Chontales, ½ to ½; Colorado Terrible, 1½ to 1½; Condes de Chili, ½ to ½; Don Pedro, 4 to 5; Eberhardt and Aurora, 6 to 6½; Exchequer, 1-16th to 3-16th; Flagstaff, 11-16th to 13-16th; Frontino and Bolivia, 1½ to 1½; Hultafall, 5 to 5½; I.X.L, ½ to ½; Javali, ½ to ½; Kapanga, ½ to ½; Last Chance, ½ to ½; New Quebrada, 1½ to 2½; Oregon Prefereance, 4 to 4½; Pestarena, 4s. to 6s.; Plumas Eureka, 2½ to 2½; Port Phillip, ½ to ½; Richmond Consolidated, 9½ to 10; St. John del Rey, 315 to 325; Sierra Buttes, 1½ to 1½; South Aurora, ½ to ½; Tecomia, 1-16th to 3-16th; United Mexican, 2 to 2½.

COLLIERS.—A little improvement has taken place during the past week in some of the best of these shares, and a more hopeful tone pervades the market generally. The coal and iron trades both give signs of coming improvement, and there can be no doubt that if Eastern matters should be peacefully settled the expansion of these as well as of all other trades will be very marked and rapid. The uncertainty which has for so long pervaded political affairs is chiefly responsible for the tardiness of the reaction which was reasonably expected to follow the serious depression of the past two years. But, notwithstanding this and other disturbing causes trade has continued to grow, and in no respect is this fact more fully borne out than by the figures which we published last week relating to the exports and internal consumption of fuel. These figures showed no sudden rise followed by a corresponding decline; on the contrary, they afforded evidence of a steady and healthy development. The latest returns of the exports of coal and coke from the chief ports—namely, those for the week ending the 9th inst.—exceed those of the previous week by no less than 100,778 tons, the figures being 340,344 tons and 239,563 tons respectively. To a very great extent this large increase is to be found from the fact that over the Taff Vale line alone 11,000 trucks of coal are running down to Cardiff every week—an amount of traffic exceeding anything known in the past, even during the most flourishing times. From South Wales we also have favourable reports of some of the branches of the iron and more particularly of the steel trade. There can be no doubt that there is a famous future in store for South Wales. The district about Swansea affords the best anthracite coal in the world—a fuel very specially suitable for the manufacture of the finest qualities of iron and steel, and it has long been a source of wonder that this coal has not been more worked. We are glad, therefore, to hear that a new company has recently been formed for the purpose of working the Ynisedwyn Coal and Iron Works, which, when they were in full operation a year or two ago, turned out a material fuel exceeding in quality the best North Country metal. The present company starts under excellent auspices, the property having been acquired for it sum ridiculously small in comparison with its well-known worth, while the management will be in the hands of men thoroughly well acquainted with the locality and its trade. We understand that a large part of the capital is already privately subscribed, and the company will, therefore, commence its work forthwith. Almada shares are unchanged at 4 to 5. The various drivings upon the main coal continue to yield well, and on the south side of the engine pit an extensive body of splendid coal is in course of development. Chapel House shares are firm at last week's prices. The opening out on the Park Mine continues rapidly, while at the same time the raisings are steadily on the increase. Profits continue satisfactory, and though the West Lancashire coal trade is a little more dull, the Chapel House manager finds plenty of customers for all the coal he can obtain. We are informed that a fair profit is now being made at Lay Hall, the shares of which remain at 8 to 10. Trade is very dull at Mold Abergord, and there is nothing doing in the shares, which are quoted nominally at 1 to 2. Newport Abercarn, 3½ to 4½; Cardiff and Swansea, ½ to 1; Thorp's Gawber, 2½ to 3; New Sharston, 3½ to 3½; Andrew Knowles, 13½ to 14; Cakemore, 5.

The latest advices from Comstock continue to point to the fact that what are known as outside districts are engaging more than ever the attention of the mining public. Some districts are fairly rivaling Comstock itself in the amount of business transacted and enhancement of values. San Francisco capital, with the concentration of the principal mines in the hands of the bonanza firm, is seeking for outside investment, and the result will be the opening up and development of hitherto unexpected treasures. Not a little of the capital is already on its way to engage in extracting the now acknowledged wealth of the Black Hills, and building up the coming territory of Arizona. Meanwhile, the principal mines of the Comstock, concentrated in strong, capable, and energetic hands, will have a new lease of life, and will enter upon a fresh sphere of productive usefulness. There is nothing the matter with the prospects of the mining world for the coming season. The daily yield of the Comstock California is 700 tons, and the Consolidated Virginia 600 tons. The ore-producing sections of the mine are looking well in every part—in fact, there seems no prospect whatever of any decrease of the regular monthly returns of the mine. The mills are all kept busy crushing, and the daily yield of bullion is fully up to the usual standard. The delivery of ore by team to some of the canyon mills has been quite difficult, but the reserves of ore on hand serve to keep all in full operation. Not many men who see the miners of the Consolidated Virginia lifted out at the top of the shaft at change of shift have the courage to descend into the lower regions of that mine. Very few men of the old residents of the Comstock care to descend into the steaming regions below, and not one man in a thousand could be induced to make the trip after seeing the men popped out at the top of the shaft, steaming as though just lifted from out of a cauldron of boiling water. Though they are shirtless—naked as at birth—men must work—the wonder is that they are able to do anything but gasp and pant. It is a place better fitted for salamanders than for men. At the head of the main incline it is as hot as in the hottest vapour bath at Steamboat Springs. One would think that men much in such a place would be quite secure against rheumatism; but for the large quantities of ice-water they drink the men could not endure the great heat in which they are placed or the floods of perspiration poured from their pores. They swallow gallons on gallons of it, and it never hurts them in the least.

Richmond, 9s to 10; the usual weekly telegram from the mine at Eureka state the week's run to have been \$90,000 from 1100 tons of ore.

The week's produce of the refinery was \$55,000. The directors announce that the coupons and debentures due on Monday will be then paid at the Union Bank of London.

As to the operations at the mine, the jealousy of San Franciscans appears to be getting excited, for a local writer observes—"The Richmond Company refine their own bullion.

They have invested nearly \$1,000,000 in providing machinery, buildings, &c., and their process is a French invention, which manager Probert has the exclusive right to use in the United States.

It is a losing process, however, for the company, as it is much more cheaply refined at San Francisco and at the eastern refineries.

The commission sums required to put it on its present footing will prove almost a total loss."

How

considerably increased. When this lode is laid open for stoping a large amount of rich ground will become available, and there is every reason to anticipate that the mine will then enter on a profitable career.

ROOKHOPE.—The surface alterations which have so long been in progress at this mine are now approaching completion, and for the present (five weeks) month 50 tons of lead ore will be sold. During the week ending Saturday, March 16, 20 tons of lead were dressed, and from a stop over the 15 eight men have broken 25 tons of ore during the month. There is, however, a large quantity of poor stuff passing over the floors which pays for dressing, but necessarily occupies time in treating, and thus prevents more of the rich stuff now broken underground being dressed. Two short cross-cuts in the 42 have each cut ground worth about 16 cwt. of ore. A rise has been put up and will shortly meet the rich vein gone down in the 25. It is estimated that there are more than 1200 fms. of ground between the 42 and 15 fm. levels, which will average about 13 cwt., and can be sent to market at 3L 2s. 6d. per ton. From the 15 to surface, east of Gin shaft, the ground is whole, worth about 1½ ton. Above the adit there are about 1200 fms. of ground, worth 15 cwt. The mine is already making profit, and from present appearances should shortly commence returns, which will place it in the Dividend List.

SOUTH DARREN.—This mine continues to look exceedingly well. The lode in the shaft is now saving work for lead. The 100, west of winze, is worth 10L; the winze below the 90, 45L; the stopes in the 90 average 25L; in the 80, 32L; and the two stopes in this level 10L per fathom. On the 16th inst. 40 tons of lead ore were sold for the month at 16L 11s. 6d. per ton, making 663L.

PATELEY BRIDGE MINES—GREAT DISCOVERY.—This week's report announces a discovery greater in present value and prospective importance than any made since the formation of the company. The Rake vein, in the bottom level, 30 fms. below adit, and 90 fms. from surface, is now worth from 6 to 7 tons of lead ore per fathom. The feature in connection with this discovery is the considerable height of the backs (35 fms.), and the great length of unexplored ground in advance. The same vein west is beginning to show strong indications of a rich deposit of lead ore. Dressing and smelting of lead carried on regularly.

ZINC CORES.

ARMAND FALLIZE.

INGENIEUR-CIVIL, A LIEGE (BELGIUM), BUYER

1.—CARBONATED AND OXYDED ZINC ORES (CALAMINE, &c.)
2.—ZINC AND LEAD ORES MIXED TOGETHER, BUT DRESSABLE KINDS ONLY.

CAPPER PASS AND SON, BRISTOL

PURCHASERS OF

LEAD ASHES, LEAD SLAGS, SULPHATE OF LEAD, HARD LEAD, BRASS SLAGS AND ASHES, COPPER REGULUS, MATTE, SCORIA, TIN ASHES, TERNE ASHES, &c., and MIXED ORES or REFUSE, containing LEAD, COPPER, TIN, or ANTIMONY.

MINERALS WANTED.

NOTICES TO CORRESPONDENTS.

** Much inconvenience having arisen in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be filed on receipt; it then forms an accumulating useful work of reference.

GAS COMPOSITION PIPE.—Will you allow me to enquire, through the Journal, of your correspondents, of what metals is Gas Composition Pipe made, the proportions, and how mixed?—SOUTH AMERICA.

SHARE DEALING.—We never interfere in the sale or purchase of shares; neither do we recommend any particular mine for investment or speculation, or broker through whom business should be transacted. The addresses of most of the latter appear in our advertising columns.

Received,—“H. C. J.” (Toronto)—“Investor” (Manchester) should apply for the information to his broker—“Shareholder” (Llanrwst); a report appears in another column of this day’s Journal—“M. W.” (Neath)—“P. D.” (Hayle)—“T. R. W.” (Stavely)—“Old Subscriber” (Bristol)—“Contributor” (Glasgow)—“G. C. S.”—“M. N.” (Exeter)—“Shareholder” (Wheat Bassett).

THE MINING JOURNAL,
Railway and Commercial Gazette.

LONDON, MARCH 23, 1878.

THE PREVENTION OF ACCIDENTS IN MINES.

Persons who know little or nothing of mines, or the mode in which they are worked, after some serious and fatal catastrophe has occurred frequently come forward with some specific which has suddenly struck them as the only true preventative against explosions of gas in particular. This has been the case with respect to Mr. JOSEPH HATTON, once a journalist, but now a novelist, who has made a startling discovery which if carried out he thinks must lead to explosions of fire-damp being unknown in the future. Like a true philanthropist Mr. HATTON threw his discovery open to the world at large without hope of reward, in the first instance in a letter, a copy of which was inserted in our last week’s Supplement. Mr. HATTON informs us that a few years ago in a popular magazine he gave a dozen notable examples of the fact that colliery accidents occurred in two, a plurality accounted for by “atmospheric disturbances.” He also informs us that all the great catastrophes resulting from explosions in mines have occurred almost simultaneously with violent storms on sea and land. On the occasion of these atmospheric changes Mr. HATTON proposes that the approach of a cyclone should be telegraphed to all our mining districts, and that there should be a storm signal at each pit’s mouth, so that when the approach of a cyclone was telegraphed all open lights should be put out, Davy lamps enforced, and blasting suspended. Practical men view such a proposal as simply absurd, and it only adds one more to the many theories proposed for the safe working of mines by those who have little or no knowledge of fiery or other collieries. Atmospheric disturbances are indicated by the barometer, and it is evident that Mr. HATTON is not acquainted with the fact that by the Mines Regulation Act it is required after gas has been found in a mine that barometer and thermometer shall be placed in a conspicuous place above ground near the entrance to the mine. But the barometer is not thought much of by many of our ablest mining engineers. Mr. WILSON, of the Oaks Colliery, considers it an instrument that could be well dispensed with, seeing that in many instances an outburst of gas precedes a fall of the barometer. As to all the great catastrophes in our mines having occurred simultaneously with storms on sea and land facts are opposed to this view of Mr. Hatton’s, for most of them have been proved to have been in no way affected by atmospheric disturbances. At the Oaks Colliery the explosion in 1866, in which the loss of life was the greatest known from any cause, it was plainly shown that the firing of a shot had a great deal to do with it. At Blantyre the loss of life was occasioned by the reckless mode of working, there being naked lights and indiscriminate use of powder, and the men allowed to fire their own shots. Something similar appears to have been the rule, but probably not to the same extent, at the colliery near Bolton, where last week 43 lives were lost.

There is no doubt but the majority of fatalities from explosions is the result of carelessness, and neglecting to carry out the rules laid down for the guidance of all parties connected with the underground work in mines. The barometer is not the instrument that many persons believe it to be, for the President of the Midland Institute of Mining Engineers remarked not so very long since that the collieries he was connected with, and others in Yorkshire, as far as his experience went, there had been no more gas reported during the low state of the barometer at the time alluded to than there was when it was very high. If, however, we take the reports of the Inspectors of Mines, our own views will be fully borne out. In one of these reports, Mr. DICKINSON says “27 lives were lost owing to a general explosion caused by the air being obstructed at the far ends, where long pipes were being used, instead of making cuts through. The gas lighted at a shot, which blew out the stemming.” In another instance we are told two men passed the danger signal and went with a naked light into the abandoned part of the workings. Mr. WILLIS notices the case of a man who put his candle into a cavity in the roof and fired the gas. Mr. WYNNE in one of his reports states, “explosion of fire-damp have occurred in ten different collieries, causing the loss of 25 lives, and, I am sorry to say, were in most cases the result of carelessness or bad management.” Mr. MOORE notes that of three explosions two of them were the result of going into disused places with open lights. In the same year Mr. ALEXANDER, in whose district the Kilsyth Colliery is situated, reports three deaths from explosions, remarking that “when the details of these accidents come to be considered I shall be able to show that at least two of them resulted from carelessness or neglect, and never should have happened.” The mines of South Yorkshire, it has been admitted, are the fieriest in the kingdom, yet explosions of a serious nature in them have been of rare occurrence during the past couple of years, seeing that in nearly all of them safety-lamps are now used, and blasting discontinued. This improvement is attributed by Mr. WARDELL, the Government Inspector, to the “increased attention paid by the employees as well as employers, and not mere matter of chance.” Mr. WARBURTON, a well-known authority, also shows that explosions owing to atmospheric disturbance are not so frequent as many persons are led to believe. In one year he informs us explosions took place on 159 days, though only fatal on 60 days, but of the 159 days he found the barometer rising on 49 days, and steady on 40 days, making 89 days in which explosions occurred when the barometer was not falling. We have here 44 per cent. of explosion with a falling barometer, and 56 per cent. when not falling. So much for the theory with respect to cyclones, storm signals at pit’s mouth, &c., which, like many others, looks very well on paper, but is useless for all practical purposes. To prevent accidents the ventilation of our collieries should be of such a character as not to be dangerously affected by fluctuations of the barometer or sudden atmospheric changes, and this is the view held by mining engineers generally. But where the ventilation is not carefully attended to, and powder and naked lights are allowed to go together, explosions must inevitably take place.

In the House of Commons on Monday the mines representatives, Messrs. BURT and MACDONALD, came out more prominently and persistently than they have hitherto done, in the course of which the Member for Stafford had to be called to order. The subject introduced by Mr. BURT related to the Blantyre explosion, and the report of the Commissioners appointed to enquire into its cause, seeing that in frequent violations of the Mines Regulation Act had been pointed out. As the manager had evidently been in fault to some extent Mr. BURT thought that his certificate should be cancelled, according to the provisions of the 32nd clause of the Act. Mr. CROSS frankly gave it as his opinion that he thought it a case

that attention should have been called to, but as the Commissioners had expressed an opinion that this case was not one in which proceedings should be taken under the 32nd clause of course he could not well take action.

A certificate we may say can only be cancelled on proof of incompetency or gross negligence, or the holder having been convicted of an offence under the Act. No one will say that the manager of the Blantyre Colliery was incompetent, although he certainly erred in not seeing that his orders were carried out, and in placing too great reliance on the statements of the overmen. Mr. MACDONALD also alluded to the Blantyre explosion, and asked the Home Secretary to name a day for discussing the new regulation laid down for the guidance of Her Majesty’s Inspectors of Mines. This being refused Mr. MACDONALD spoke strongly on the subject of explosion. He admitted that the Act of 1872 did an immense amount of good, as had the miners’ Acts that preceded it. But within a very recent period 535 lives have been lost in mines, 210 of them by the Blantyre explosion; and those lives, he had no hesitation in saying, had been lost through the violation of rules laid down by the Mines Regulation Act. Such cases were not “accidents,” but were a scandalous waste of human life, and he should call them “murders in mines,” and nothing else. We are not surprised at the strong language used by Mr. MACDONALD, for the accidents he alluded to were certainly what may be termed “preventable.” At the same time it must be admitted that the deceased were accessories, for they contributed to the explosions by which their lives were sacrificed. So evidently thought Mr. CROSS, for he remarked that he wished in the most kindly spirit to give, through Mr. MACDONALD, a word of caution to those who were employed in mines, for there was much difficulty in preventing men from running great risks through their own carelessness. If the mines were to be worked with care, and with due regard to the preservation of life, all parties concerned must try and carry out the law, and not only the mineowners and inspectors, but the miners themselves must have a due regard for care and precaution. The men have certainly great power with respect to carrying out their work to prevent any disturbing or dangerous element, but it is plain that very many of them by their acts and thoughtlessness invite the very influences that lead to their own injury and destruction. As a step in the right direction, we should like to see a superior class of deputies employed in many districts, for on them a great deal depends as to the safety of the men. The Act of Parliament, too, should be most rigidly enforced, gunpowder prohibited in all fiery mines, and naked lights abolished in collieries where gas has been found. These are the only remedies along with good ventilation that will prevent explosions in our mines.

OUR RAILWAY IRON ABROAD.

The aspect of the foreign and colonial demand for our railway iron is, upon the whole, of a more cheering character. Thus in February this year we sent to British colonies and foreign countries 41,631 tons of our railway iron, the corresponding exports in February, 1877, not having exceeded 20,690 tons, and in February, 1876, 18,099 tons. The figures for January were almost equally satisfactory, so that the aggregate exports for the first two months of this year were 73,463 tons, as compared with 37,706 tons in the corresponding period of 1877, and 41,679 tons in the corresponding period of 1876. The *prima facie* aspect of these statistics is decidedly satisfactory; but then, the awkward fact remains that prices have been reduced to so low a point that whether there is a demand for our rails or not there is scarcely any margin for profit on their production. This is shown in the fact that the 73,463 tons of railway iron exported from the United Kingdom in the first two months of this year were valued at 504,006L, the corresponding value of the 37,706 tons exported in the first two months of 1877 having been 317,237L, and that of the 41,679 tons exported in the first two months of 1876 386,949L. Still whether railway iron is being exported from our shores upon profitable conditions or not one fact remains clearly established—that low prices have rather materially stimulated consumption.

That this has been the case will be at once seen from a comparative statement illustrating the exports of our railway iron to the principal British colonies in the first two months of the last three years:—

Colony.	1876.	1877.	1878.
British America	1,759	848	65
British India.....	5,759	6,969	33,189
Australia	6,043	6,770	11,955
Total	13,561	14,587	45,209

There has thus been a steady progress in the colonial demand since 1876. The extreme weakness of Canadian railway credit and the severity of the Canadian winter season have reduced the figures relating to the Canadian consumption of our railway material to a comparatively low point; but the Indian and Australian demand for British rails and accessories has expanded very materially of late, and there can be no doubt that this expansion is due to the moderate rates at which English rails, chairs, &c., are now offered to colonial consumers. The vigour with which the Anglo-Indian Government is now proceeding with the construction of State railways is, beyond all question, to be attributed to the fact that the Secretary of State for India in Council has come to the conclusion that now is the time to obtain permanent way materials upon exceptionally cheap terms. The various Australian Governments have also not been inattentive observers of the course which the British iron trade has taken during the last five eventful years.

As regards the general foreign demand for our railway material it would have, probably, exhibited a declension but for an exceptional enquiry which has prevailed for our rails on German account. Thus, in the first two months of this year we sent the Germans 9333 tons of our railway iron, the corresponding exports in the same direction in the corresponding period of 1877 having been only 226 tons, and in the corresponding period of 1876 29 tons. The exports of our railway iron to Spain also increased in the first two months of this year to 4075 tons, as compared with 4355 tons in the corresponding period of 1877, and 2304 tons in the corresponding period of 1876. To Egypt, again, we sent 2113 tons of our rails to Feb. 28 this year, as compared with *nil* in the corresponding period of 1877, and 70 tons in the corresponding period of 1876. The exports to several other countries have, however, declined this year.

THE COPPER TRADE, AND ITS PROSPECTS.—The article published in last week’s Journal was supplied by a correspondent, and it was by accident that the intimation of that fact was omitted. It does not in any way represent the opinion of the Editor, but that of the writer and his associated friends in the trade.

SPONTANEOUS FIRING OF COAL CARGOES.—The Board of Trade enquiry at Liverpool into the loss of the barque Annie Richmonde at sea through the spontaneous ignition of her cargo of coal was concluded on Monday, when the Court delivered judgment to the following effect:—In this case the cause of the loss of the vessel was not left in so much obscurity as had been the case in previous inquiries of a similar nature. In respect to 300 tons of the cargo, which had come from the West Lancashire Colliery Company’s main dell seam, there was the evidence of Mr. Hedley, Her Majesty’s Inspector of Mines for the district, which showed that it was particularly liable to spontaneous combustion, while about 80 tons had been shipped in a wet condition. Another element of danger was added by the coal being dropped into the hold from the wagons and thus becoming broken up and consolidated, in which state it was more liable to combustion; and, furthermore, it appeared that the ventilators were choked up and inoperative. Under all these circumstances the result was not surprising, and though the Court did not think a case of “wrongful act or default” could be established against the master, they could not absolve him from blame. In spite of the strong recommendations of the Royal Commissioners of 1876 he had no thermometer on board to test the temperature of the coal; there was no fire-engine on board, and the hose was useless. He should also have satisfied himself before leaving port that the ventilators were in working order. The Court was strongly of

opinion that the recommendations of the Royal Commissioners of 1876 with regard to the carrying of thermometers and the provision of a thorough system of surface ventilation should be made compulsory upon masters and owners of coal-laden ships.

INSTRUCTION IN COAL MINING.—The Yorkshire College, at Leeds, has just added to its curriculum a subject of great practical importance, especially in Yorkshire—Lectures on Coal Mining. Geology has from the first formed a leading branch of the educational work of this college, but it was felt that the teaching of this science should be supplemented by instruction in practical mining, and particularly coal mining. This, by the aid of the Drapers’ Company of London, the Council have now been able to provide. Mr. Arnold Lupton, F.G.S., who has been appointed to this department, met his class for the first time last Monday; 22 students have already entered, a number which must be considered very satisfactory as a commencement, but it is expected that the class will become much larger when the fact of its existence becomes better known among candidates for mining certificates, and others interested in the coal trade of the county. The course includes the theory and practice of coal mining, mining engineering, and colliery management, and the class meets at the College, Cookridge-street, every Monday at 5.30 P.M.

LIFE BRIGADES IN MINING DISTRICTS.

Attention having been drawn to this subject by Sir E. Wilmot asking in the House of Commons, on Monday, “whether the Government would consider the proposal made by Mr. Bagot in his work on Accidents in Mines for the systematic organisation of life brigades to rescue miners from the effects of after-damp and other noxious vapours, and whether the Government would appoint a Select Committee to report on the plans suggested for gaining safe access to a colliery after explosions,” it may be well, although we have already published one notice of Mr. Bagot’s book,* to give the substance of the chapter containing the suggestion to which Sir E. Wilmot alludes. The chapter is devoted to the consideration of “The Organisation of a Life Brigade for Mines.” In it Mr. Bagot says:—We have in England, perhaps without exception, the best and most efficient fire brigade, and without doubt the best lifeboat institution extant. The cost of appliances for maintaining fresh air in sufficient quantity for a gang of relief men to work in “sty” or any deadly gas is so great that they can hardly expect each colliery to have its own appliances. In our opinion the Denayrouze high-pressure aeroaphore is one of the appliances that should be considered. [The apparatus and method of using it have frequently been explained in the Journal.] The reservoir of fresh air is arranged as follows:—Three steel cylinders are charged with air by a compressing pump; to these cylinders tubes and necessary valves are joined, to enable the wearer to breathe with comfort. A gauge is attached, which shows the wearer how long the air will last, and is attached to the air-tube leading from the receiver, and therefore independent of the atmosphere of the mine. The complete apparatus for two men costs 186L. It is suitable for about 30 minutes’ urgent work, such as getting men out from the effects of after-damp, erecting a stopping, laying on brattice, &c. The advantage is obvious, since two men can enter a heading without dragging a long tube after them. Any one who has had to undergo this inconvenience will know the danger there is in retracing steps, and getting the air-tube entangled round a prop or a piece of iron rail. We would caution those who have to use such appliances as this, and recommend them never to attempt to retrace their steps in a mine without first taking the air-tube in two coils in their hand, and coiling it up as they retreat; not with a view of keeping it out of the way, but because, should the air suddenly become cut off, the cause may be readily found by passing the hand along the pipe, and following the course until the cause of the obstruction is reached.

The next appliance and *modus operandi* is also an invention of M. Denayrouze, and consists of a bellows pump, lamp, respirator, and eye protectors, joined up with suitable lengths of tubing. Here again the lamp is supplied with air from the pump. The whole of this arrangement complete, with 165 ft. of tubing, costs 35L. The cost of equipping a relief gang such as I propose should be formed in the centre of mining districts will be—*aeroaphore* for two men, 186L.; bellows pump, employing two men, 35L.; spare tubing 60 ft., employing one man, 6L.; tools, brandy, lint, and stretcher, employing two men, 5L.; picks, timbering, and rope, employing seven men, hewers (no allowance for cost, being provided by the pit); and hose, employing three men, pit carpenters (no allowance made for cost, but from the above statement this may apparently be estimated at 2s. per foot). The *aeroaphore* men are to be engineers, and the brandy and stretcher men are to be deputies. Mr. Bagot gives this estimate in tabular form, and then continues:—

Of course the number need not be limited to 20 only, but that number will be found sufficient for any relief or exploring party for immediate search or rescue. This gang is composed of 20 men, thus picked:—Three engineers (two of whom would go in the face), two deputies (to direct with remaining engineers), seven hewers (in case of fall, and as extra hands), three pit carpenters. The whole of the *aeroaphore* tackle and appliances should be put in a box, and kept at some central place, and the men at each pit should know how to use it. Really there is nothing to learn; all that is required is that the men who use it shall have plenty of the true British pluck and determination to do what is required. Every pit should be made aware of the head-quarters of these brigades; and should an accident unfortunately occur they should telegraph for the relief apparatus, the men being drawn from the pit. Those who are willing to serve and are proficient should have a distinctive mark, in order to ensure competent men. One deputy should live where the relief apparatus is stored. Of course, this project would be met by certain men, who are against everything and propose no alteration, by the statement that we should not get the men. This statement is nonsense, for we have always drawn an exploring party from a crowd of lookers-on, mostly miners, by merely asking for them. The difficulty is to get the first man; and I would here advise every man who may be called upon to organise an exploring party, and where time lost means lives lost also, to arrange with one man before calling for men to volunteer, that on calling that man comes forward at once. If the man does not seem inclined to do this, select a married man, and then on completion of the number required refuse him on the ground that he is married, and ask someone to take his place or do without him.

On descending the pit and arriving at the bottom, settle distinctly what is to be done before any men go “in bye.” We are confident that many lives might be saved if such an organisation were got together in mining districts. We raise annually (say) 140,000,000 tons of coal in Great Britain. If one penny per ton was charged upon coal an income of 583,333L. per annum would be derived. I think this organisation might be kept up on a tax of one penny on every 10 tons raised. We would remind our readers that the question of lives lost in working and carrying coal is one that has occupied the public attention of late, and that if the public wish to lessen this loss of life they must be content to pay a little more for their coal than they did. We, as mining engineers, can find ways of lessening this loss of life if the public are prepared to find the means of paying for them. If legislation interferes, and says “those collieries who cannot have the Guibal fan are not to be worked till they do have it,” all that happens is the lessening of competition and consequent increase in the price of coal.

The whole subject has been treated very briefly here; in fact, there was no necessity for writing this book as far as regards those occupied in the profession of coal mining. Our object in doing so was to try to set the whole matter in its true light before the public, with a view of showing what is done and what is required still to ensure a maximum amount of safety for the miners. If we have succeeded we shall not consider our labour lost. In conclusion, I would earnestly ask those whom it concerns to consider the use of explosives in mines; the timbering and propping of roofs in the hands of the stall men; the stall men finding their own powder;

* “Accidents in Mines: their Causes and Prevention.” By ALAN BAGOT, M.E.

London: C. K. Paul and Co., Paternoster-square.

the practice of "putting back" the same coal; and in considering them to discontinue them if they think them "dangerous practices not expressly forbidden in the Act."

REPORT FROM CORNWALL.

March 21.—In sympathy, as it is said, with the dulness in the London metal market, the Cornish smelters have nominally withdrawn a half of their recent advance. We say nominally because business is dull, and where transactions have been made within the past few days there have been sundry variations, and both higher and lower figures than the official prices have been realised. There is no doubt that the cause of this is to be found in the daily fluctuation and uncertainty with regard to our foreign relations. The metal market is just now exceedingly sensitive, and responds to every change in the prospects of the settlement of affairs in the East, and so it will be to the end. We must be content to wait until the diplomats settle their difficulties before we can hope to be landed upon sure ground.

And if the metal market is thus sensitive, the share market is of course sensitive likewise, and there has been some falling back from the advance which followed the putting up of the tin standard. We do not regard this, however, as of any great importance. The actual value of the mines remains unaffected, and there have been few better opportunities for those who are inclined to invest in Cornish mines than the present. Prices are so low in most of the good mines (and the poor ones have been pretty well weeded out) that the slightest real renewal of activity must lead to very satisfactory results. The worst that can happen to a speculator who chooses his investments wisely is that he may have to wait a little while for his return, for there is no need that he should run any risk of calls.

South Caradon continues, like Dolcoath, to keep up its dividends and its prospects. The mine has now been paying dividends for over 40 years, and there is no reason why it should not continue to pay dividends for certainly an equal time to come; for it is looking to the full quite as well as ever, and alike in quantity and quality the returns are equal to the very best times. Application is to be made for an extension of the sett, and at the meeting a hope was expressed that while the depression continued the dues should be lowered. South Caradon has been such a source of wealth to its lords—an unearned increment of their property in the strictest sense—that the application certainly deserves favourable consideration. It should be remembered that all the risk has been on one side.

A very striking illustration of the changes which have come over Cornish mining in the past 30 years is supplied by the fact that whilst 25 years ago 33,000/- a month was paid in wages to the miners in the St. Day district, at the present time the labour cost of the mines in the locality over the same period does not exceed 100/- The recent reductions of the surface hands at many of the mines have compelled numbers of the bal girls to try domestic service; though clumsy at first, they are generally painstaking and honest, desirous of doing their best. When it is considered how much better off girls are in service than those who work at the mine it seems amazing how they prefer the latter, but the reason is that they can spend their evenings as they please, and sleep at home, when engaged in day work in the mines, while in service this is an impossibility. The wages of the mine girls vary from 8d. to 1s. daily, without food, and sometimes a little extra is made by working overtime. For this they go to their work about seven, having an interval of an hour, or half-an-hour in some cases, for dinner, leaving the mine or tin streams at about five or six o'clock in the evening. They generally work under cover, but in winter are much exposed to cold and wet, still the life is a healthy one, and seems to be quite compatible with a great deal of enjoyment.

There have been a good many important cases heard at the Stanley Court during its recent sittings, but in an individual, and not in a general, sense not involving any great leading points of principle. One of the most important of these, so far as the amount of money was concerned, arose out of Ambrose Lake Mine, out of the construction to be placed upon the 25th section of the Companies Act 1876. On Dec. 22, 1871, a contract was entered into between William Eaton on the one part, and Joseph Taylor and George Hardie on the other, whereby Eaton agreed to sell the mine for 24,000/- in 6000 fully paid-up shares of 2/- each, and 1200 half-paid shares of 1/- each to be considered as paid thereon. Mr. Moss held over 6000 shares, upon which the 2/- per share was claimed, and Mr. Taylor held between 3000 and 4000 shares. His Honour, in giving judgment, expressed an opinion that it was a hard case for each of the defendants, but the terms of the 25th section of the Act were imperative, and he must give effect to them. Mr. Moss must be settled on the list for 8400 shares, Mr. Taylor for 7065 shares, Mr. Meggin for 300 shares, and Mr. Clark for 169 shares. This is an illustration of the working of the Limited Liability System as applied to Cornish mines. Whatever may be said of the Cost-book System, the "Limited" has clearly no immunity from hardship.

TRADE OF THE TYNE AND WEAR.

March 20.—There is no change of importance in the state of the Steam Coal Trade; it is quite as dull as it was before the long strike. The engineers in Northumberland have accepted a reduction of 6d. per day; this reduces their wages to 4s. 3d. per day of eight hours. At Camborne and Coupen these extensive mines continue at full work, but orders are not coming to hand so quickly as was expected, a fact generally accounted for by the unsettled state of affairs in the East. The Durham coal trade is very inactive, and more works are still being closed. The Redheugh Colliery has been stopped this week, but it is expected that the men will submit to a reduction, and that the works will again be started in a few days. The Elswick Colliery continues to stand, and the Tynesdale, Killoe, and Ferryhill collieries have been stopped. The Durham Main and many other collieries have also been stopped, but most of these works will be re-opened if certain reductions are submitted to by the men. The house coal trade continues very inactive, and the gas coal trade, which has been sustained in Durham, is now falling off. The coke trade inland is dull, owing to the furnaces lately put out of blast, but the export coke trade has been tolerably active. Furnace and manufacturing coals are extremely plentiful, and selling at a very low price. The chemical trade has shown considerable activity during the week, and some large sales have been made at increased rates; some classes of goods have advanced 20 per cent. Stocks have been reduced, and a good demand has now sprung up.

It is proposed to hold an Art and Industrial Exhibition at Jarrow in July or August. This great seat of iron manufacture and iron shipbuilding is a most suitable place for such an exhibition, and it is anticipated from the support already promised that it will be of a highly interesting character. A sum of money will be devoted to prizes for ingenious productions.

It is intended that the members of the Northern Institute of Mining and Mechanical Engineers shall have an excursion to France during the present summer. The programme will include a visit to some of the most important coal mines in that country and to the Paris Exhibition. The secretary, Mr. Bunning, is now engaged in making arrangements for the excursion, which there is little doubt will prove both interesting and instructive. Some papers on important subjects in connection with coal mines, &c., are in course of preparation for the purpose of being read at the meeting in Paris.

At Middlesborough on Tuesday the market seemed more animated, and things are losing the late settled condition of dulness consequent upon the misunderstanding between the merchants and makers. The latter having abated their terms, and, so far as prices are concerned, broken up their combination, the merchants are speculating to some extent, and a fair amount of sales has been entered into within the last few days. Makers generally do not quote higher than 40s. 6d. No. 3, but merchants are in some cases able to satisfy their requirements at 40s., less 1 per cent. The price for forge iron is 1s. per ton less. The manufactured iron trade has remained without any material alteration. The position of manufacturers, it is considered, will be improved when the wages question is settled, as it is now considered likely to be within the next few days, as both employers and employed are showing a spirit of compromise.

If present prices of manufactured iron keep up when wages are reduced the manufacturers will be in a better position than they have been in for a long time. The general figure for plates is 6s. 5d. for immediate delivery, and 6s. 6d. to 6s. 10s. for execution during the summer. The wire-mills are well employed, and also the majority of the engineering works in the district. Ordinary bars keep at 5s. 12s. 6d. A handsome stand of Whitwell's furnaces, diagrams, &c., to be exhibited in the Paris Exhibition, was shown on 'Change. The coal and coke trades show no alteration.

The exhibits for the coming International Exhibition at Paris were sent off from Middlesborough on Monday. They comprised a huge pillar of ironstone, 10 feet high, and weighing over 3 tons, from the firm of Bolckow, Vaughan, and Co., coming from their Eston Mines; 24 cwt. of coke from Messrs. Bell Brothers, and 12 cwt. of limestone will accompany the coke, so as to indicate the constituent elements that go to make a ton of Cleveland pig-iron. Messrs. Samuelson and Co. are also exhibitors of pig-iron. More interesting, perhaps, are the exhibits sent by Messrs. Stevenson, Jaques, and Co., wholesale manufacturers—an umbrella stand, a garden chair, hat racks, boot jacks, &c., all cast direct from the blast furnace, just as common pig-iron is. They are quite smooth, as if cast by the ordinary method, comprising ornamental and artistic designs. This latter is quite a new industry in Cleveland, recently introduced by the firm named, and includes all branches of domestic ironwork.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

March 21.—Furnace coal is not in improved request, neither can a much better demand be reported for forge qualities. The passing away of the severe weather is resulting in a somewhat less enquiry for household sorts. The pig-iron trade is hardly so dull as it was in the better qualities. By the blowing-in of his fourth furnace at Spring Vale Mr. Alfred Hickman is making his output a total of 1100 tons weekly. The good effect of this increased output upon the district is, however, more than counterbalanced by the recent stoppage of the two furnaces of the O'er Bed Iron Company. A better tone marks the finished iron trade.

A report is current that a plate order, extending over some 18 months, has been secured by Mr. H. O. Firmstone, and that he will consequently restart his Crookhay Ironworks, at Wednesbury, which have been closed for some months. All statements as to the re-starting of a part or the whole of the Shrubbery Ironworks in Wolverhampton, either by the present owner or by others, are premature; nothing definite has yet been decided upon.

Mines drainage matters are still a subject of much discussion by colliery owners in various parts of the district, and of the continual rising of the water in and about Bilston there are grave complaints. The Commissioners are now taking the first step towards the drainage of the mines in the Kingswinford district by draining the "Bromley" pound there. It is officially estimated that the cost of these operations will be well covered by a mines drainage rate levied on the mines benefited.

Wages disputes between colliers and their employers are just now occupying the attention of some of the local courts. Two miners have, in the Walsall County Court, after a hearing of 4½ hours, recovered from the Chartermaster of the Fishley Colliery 4/-—3/- in default of notice and 1/- in respect of other items. The men had been discharged because they declined to accept 4s. 6d. per yard instead of 5s. for driving headings. They claimed 7/-.

The North Staffordshire Finished Iron Trade has not fallen off upon the week, taken as a whole, and the demand and prospects for the future are both improved upon three weeks and a fortnight ago. Prices are a shade firmer. The Pig-Iron Trade is hardly so dull as it was. Coal is in plentiful supply, but the demand is not so good as owners would desire.

The majority of the miners in the Tamworth district have accepted a 10 per cent. drop in wages, rendered necessary by the depression in trade.

The colliers in the Warwickshire district are, most of them, under notices which point to reduced wages, with the alternative of lengthened hours. They are meeting the action of the masters by publicly passing resolutions urging the "Coalowners" in the face of the distress now prevalent to take steps to limit the output so as to raise prices, and allow of the workmen receiving higher wages."

Mr. Charles Callaway, M.A., B.Sc., F.G.S., of Wellington, writes—"It may interest your scientific readers to know that a Government grant has been made to me, on the recommendation of the Royal Society, in aid of my researches into the geology of Shropshire."

CAKEMORE COLLIERY AND BRICKWORKS, ROWLEY REGIS, SOUTH STAFFORDSHIRE.—When a colliery, situated like this is, in an iron district, and depending, therefore, very much upon local demand for the sale of its produce can, not merely live, but yield profits, while many other collieries are starving, it obviously becomes a home investment well deserving of attention, being apparently certain to make large returns when—as is sure to come sooner or later—the reaction takes place. The coal and iron trades have always been subject to periods of inflation and depression, and those who, possessing good properties, have tided over the bad times, have eventually reaped a good harvest, and so doubtless, it will be again; indeed, sensible colliery owners have always reckoned upon periodical recurrences of bad times, and averaged their profits accordingly. In most collieries there are two great drawbacks—the constant danger of explosions and the necessity for keeping the water down; the latter especially, at all times expensive and onerous, becoming doubly so when low prices make every shilling an object. From both of these serious drawbacks it appears that the Cakemore Colliery is free, there being no risk of explosion, while the colliery is virtually dry about three hours per week, sometimes less, with the buckets (not pumps) sufficing to keep down the little water made in the underground workings. On the other hand, it possesses a very great advantage in the combination of brick-making with coal-getting, thereby enabling a profitable use to be made of the slack, which—in bad times especially—is the least saleable portion of the colliery produce. The supply of the materials for brick-making is of undoubted quality, and practically inexhaustible, the clay going down from surface to about 120 yards deep, a large portion—about 18 yards thick—of which consists of the well-known blue marl, from which are made the celebrated Staffordshire blue bricks, which, being imperishable, and almost like iron castings, are used not merely locally, but in all parts of the country, and even shipped abroad.

The company during last summer made about 1,500,000 bricks from the surface clay with the aid of Clayton's patent brick machinery, but finding the profit on the blue bricks much greater, and the demand far more extended, they are supplementing that plant with powerful grinding machinery, adapted for the blue marl mentioned above, and they expect to be almost immediately turning out 200,000 bricks a week (mostly blue bricks), and to be making a profit from the colliery and brickworks combined of fully 300/- a week. Underground the seam of fire-clay, the two seams of ironstone and the seams of coal are all intact, except the Ten-yard or Thick coal, which is here about 23 ft. thick, and of which there are about 90 acres in the maiden state. It is true that this is not the full thickness of this celebrated seam, which (as the former name implies) averages about 30 ft. thick, but the lesser thickness of the Cakemore Thick coal is in a great measure (and in bad times more than) compensated for by the saving of the heavy cost of pumping, to which most of the collieries in the deeper part of the coal field are subject, and the cost of which is so intolerable in these times that many collieries have ceased pumping, and are thereby drowning out not only their own workings, but in some cases their neighbours' also, none of which, however, can affect the Cakemore Colliery. Although the underground operations are at present confined to the driving out of the gate-roads in the Ten-yard seam towards the boundary, from whence, when they are completed, the coal will be worked back in quantity; and although this work, which is like making roads on a building estate, and comprises, of course, a large portion of the eventual expense of winning the coal, is in great measure development work, still it is being done at a

profit, the miners being paid for that work by contract prices for the coal brought to bank out of their drivings, which prices yield a fair profit even at present rates; and it is obvious that this profit must be largely increased when the expense of driving ceases, and the coal is worked back from the boundary in larger quantities.

REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

March 20.—The letter concerning Blaen Caelan Lead Mines, by Messrs. Church, Misted, and Co., as well as that by Mr. Pell, which appeared in the Supplement to last week's Journal, give a satisfactory explanation of the omission of the purchase price from the public notices of the mine; they must also be satisfactory to those interested in the mine, as well as to those outside who are jealous for the honour of mining. I for one wish the company in its new form every success.

Talking of Cardiganshire mines, I observed lately a good letter in the Journal from our indefatigable friend, Capt. Absalom Francis, on profitable mining in depth in Cardigan, in nearly all of which I agree. One statement, however, requires qualification. The clay-slate formation, Capt. Francis states, extends a mile in depth, and the inference is, as I understand it, that the lead mines will hold productive to that depth. Now, the clay-slate formation comprises several distinct groups of rocks known, to start no higher, as Llandilo Arenig, Singula flags and Tremadoc slates, which last repose upon Cambrian grits and slates. Now, the productive lead zone in Wales, and I may even say everywhere else, is limited in depth to near the base of the two former groups. Wherever they have been passed through, and the Singula flags are touched, lead in profitable quantities ceases, copper where the strata are of a certain character taking its place; the combined thickness of these two formations cannot in Wales be taken as exceeding 4000 ft. It, therefore, follows that supposing if at any one point these strata are complete, their upper portion not having suffered any denudation, the maximum depth of the productive lead zone will be 4000 ft. But it is seldom the strata are so complete, and the thickness of the zone will have to be reduced at any given point by the thickness of the strata that have been removed. Then, throughout the portion of the zone presented there will be, as in other places, interstratified shales through which as the lodes pass they will become unproductive. What we want in Cardigan is a series of reliable sections of productive and unproductive strata passed through in the different mines by the careful correlation of which mining in that county may be placed on a safer basis.

We are so often reminded by writers on mining in this county of the successes of Sir Hugh Middleton and Mr. Bushell, that I wonder the shades of those departed worthies rest in their graves. If, however, the writers referred to will only reflect how many more losers than winners there have been in mining adventures in Cardigan they will cease to wonder that, apart from the deadness of the times, so few persons should now care to go in for the winning of the most attractive prizes.

The Van Mine keeps to the front; it paid last year in dividends 42,000/-, carrying a little surplus forward.

The Coal Trade of the Wrexham and Ruabon district has improved somewhat, and considerable consignments of coal are now sent by the Great Western Railway southwards. The main coal, 9 ft. thick, has just been struck at Bersham Colliery, near Wrexham. The Wrexham District Tramways Company have obtained permission to use steam on their roads. The works of the Bala and Festiniog Railway, which is to connect Festiniog with the Great Western Railway system, are about to be commenced, the necessary land having been secured.

If the Vron Slate Company conducts its business as loosely as its meeting, as reported in the Supplement to last week's Journal, it is likely never to be long out of difficulties. Capt. William Francis reports of the St. Patrick Mine that the "great discovery lies before them." The company does not abate hope, and I wish for them that the discovery may not be a long way before them.

The traction engine persecution, described in my last report, has had the effect of thoroughly arousing the inhabitants of the upper part of the Tanat Valley; Mr. Thomas Savin, the owner of the engines and the slate quarries, received quite an ovation on Friday and Saturday last at Llanrhaiadr and Llangynog. At the latter place the rector of the parish presided at the public meeting. Warm expressions of sympathy were given to Mr. Savin, and the persecutors received their share of not very complimentary (Welsh) joking and other remarks. There were large gatherings of ratepayers and others at both meetings, at which it was strongly stated that the ratepayers preferred well-worn roads and good trade to smooth roads and no trade. There were, of course, the customary poetical effusions, and altogether the proceedings were of a very enthusiastic character.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

March 21.—In the lead mining districts the men are working steadily; and, unlike those connected with collieries, they are contented with their position, although their wages are only that of ordinary labourers. Some of the best mines that a few years ago raised large quantities now put out but little. This has been the case with the well-known Millclose Stoop Mines, that in 1872 produced 2446 tons of ore, being rather more than given as the entire produce of Derbyshire for 1876, in which year there were 50 mines that produced 5 tons of ore and upwards, and 90 that raised less than 5 tons. In some instances the ore has been worked out, and in others men without capital and the necessary machinery have broken ground, and after a short spell of working they have given up altogether, not being able to get sufficient ore to pay for their own labour. Many of the mines, too, are a considerable distance from any railway, which is another drawback. There are a few mines that are paying tolerably well, and there is a probability that when capital is brought to bear Derbyshire may again be placed in something like its former position as a lead-producing county. But it must not be forgotten that lead has been worked in it from the time of the Roman invasion, and that if real success is to be attained it can only be achieved by breaking into virgin ground, and such trials as would be necessary would be costly. At most of the collieries the men are either working under arrangements come to as to wages, or are under notice of a reduction varying from 5 to 10 per cent. The associated masters have agreed that the reduction shall be 7½ per cent., and this will be enforced. The demand for house coal is still moderate, and is not likely to improve now that the weather is such as to lead to a lessened consumption. Prices, too, are not only low but unremunerative. To London a fair tonnage continues to be sent, and the charge there to consumers is now exactly what it was in October, 1871, before the advance in wages commenced, whilst the carriage rate is now higher by nearly 2s. per ton—a fact that shows the colliery owners are in much worse position than they have been during the last seven years. Steam coal as yet has not made any marked improvement, although the Easter season is fast approaching. At Dronfield the Bessemer works are as active as ever, and are likely to continue so.

Trade in Sheffield is now much better than it has been for several months, and a considerable number of names have been taken off the relief list, although there are still many persons entirely unemployed. The heavy plate mills are working tolerably well on orders from our own Government for land batteries and defences. The other mills are also more fully employed. The demand for cast-steel is better, more especially for certain special qualities and brands, whilst table cutlery is in improved request. Large quantities of Bessemer rails are being turned out daily, and there is every appearance that this important branch will be active for months to come. Not much is being done in iron rails, but puddlers and millmen are doing tolerably well. A steady business continues to be done in malleable iron and castings of a varied character. In South Yorkshire the miners' wages question is the all-absorbing one. Some of the men show a disposition to strike against the 7½ per cent. reduction, but they are likely to think better of it, seeing that they have no funds to fall back on, whilst the masters are prepared to keep their pits standing if necessary. At Dodworth the men at the Church-lane and Silkstone come out according to a resolution passed on Wednes-

day night with respect to the proposed reduction in the price to be paid for slack, and they bring their tools out to-day. This has no reference whatever to the general reduction. The colliers are now working on the average about four days a week, whilst at some of the pits there are considerable stocks of coal—by no means a healthy sign. The iron trade is far from brisk, but the men are kept fairly going.

Sir Charles Henry Firth, of Flush, has suspended payment. Sir Charles was until lately a member of the firm of Messrs. Edwin Firth and Sons, of Heckmondwike, but some time ago he retired, went into the colliery and brick-making business. The liabilities are £2,666. Messrs. Car and Cadman, of Gomersal, solicitors, filed a petition in the Dewsbury County Court for the liquidation of the debtor's affairs by arrangement or composition. Mr. James Lakeman, of Messrs. Jones and Co., accountants, of Leeds and London, was appointed receiver. The debtor is a West Riding magistrate, and deputy-lieutenant of the county.

The annual report of William Jessop and Sons (Limited), Brightside Steelworks, Sheffield, announces a profit of £28,000, and a 5 per cent. dividend. Owing to the drop in the price of iron the stock at the time of the formation of the company has depreciated to the extent of nearly £43,000.

The inquest on the bodies of the seven colliers killed by the explosion at the Maindell Pit of the Whiston and Wigan Colliery Company was concluded on Wednesday before Mr. C. E. Driffield, at Huyton Quarry. Besides the deceased, 16 other men were injured. —James Mackinson, underground manager, deposed to the efforts to repair the stoppings through which the smoke escaped from old workings. Several explosions occurred shortly after each other. He had never worked in a mine so liable to explosions from spontaneous combustion.—John Howard, chief fireman, attributed the disaster to gas collecting in the stoppings, and through the imperfect packing fresh air must have gone in. The gas would be non-explosive without the fresh air. He did not think there had been a fire from any other cause than spontaneous combustion.—Another fireman said he had never known smoke to come from where the explosion was previous to this.—Mr. Fidler, managing director of the company, said that spontaneous combustion was a difficulty they had to contend against for three years. They had now determined to close the mine altogether. Everything had been done to guard against danger.—Mr. Hall, Government Inspector of the district, said that two years ago there was a similar explosion in the mine, and at the desire of Mr. Fidler 20 of the best mining engineers decided that sand stopping by material was the best thing for cutting off the old workings. The jury returned a verdict that the men lost their lives by accidents, and praised the manager and all connected with the colliery for their efforts to save life.

An important case in connection with the working of collieries was heard at the Swadlincote Petty Sessions, on Tuesday, arising out of the new system of working introduced within the past few months at the Donisthorpe Colliery. The old system was that usually adopted in the district, but as this was found to leave a great deal of coal in the parts of the pit which were worked it was resolved to try a new system. This new system was to build "packs" to support the roof after the coal had been taken away, and the roof was built of stone bind. The roof gradually settled on the "packs," and as there was then a layer of coal on the "packs" it was resolved to disturb the "packs," remove the coal, and use timber supports where the coal had been. On Nov. 16 there was a fall of roof, and a man was killed, and on Jan. 16 there was a second fall, and a second man was killed. The attention of the district Inspector was called to the matter, and he, after investigating the circumstances, came to the conclusion that the fall of roof was due to the interference with the "packs," and he reported the matter to the Home Secretary, who ordered the present proceedings to be instituted. A good deal of correspondence had passed between Mr. Evans and Mr. Checkland, the latter whom admitted in one of his letters that the object of the new system was to get as much coal from the pit as possible, and to prevent fires by spontaneous combustion. The system was condemned by Messrs. Evans, Stokes, and Wynne, Government Inspectors, and by Mr. Howe, manager of the Nethersole Colliery, but Mr. G. E. Checkland, the defendant, Mr. Millership, engineer, Mr. Hardy, manager, and Mr. Coke, consulting engineer, were called to show that the system was a safe one, although the latter gave his opinion with reservation, after hearing the opinions of the gentlemen called for the prosecution. The Bench believed that the charge was fully proved, and fined the defendant £11, and costs.—There were five other charges, but they were withdrawn.

REPORT FROM MONMOUTHSHIRE AND SOUTH WALES.

March 21.—As time goes on the Iron Trade does not improve, and although at a few of the local centres there appears to be a little more doing, yet this is not the general condition of the establishments, many of which are only just kept on the move. There are a few colonial orders in hand, and clearances during the week have been to Australia, New Brunswick, Spain, and Denmark. Buyers still seem to be holding back, apparently thinking that the masters will make a reduction in prices, but under the present state of affairs they are hardly likely to give way. Quotations are now so low as to make it extremely difficult to get a profit. For rails the demand is still dull, but a little more animation is apparent in the pig-iron department. Bars are still in limited request. The steel works show about the usual amount of activity, and at the tin-plate establishments full time is the order of the day. Prices are, however, unsettled, and as low as ever.

The Coal Trade is not materially changed. Shipments are maintained up to about recent averages, and the foreign demand is fairly kept up for steam coal. Some of the collieries are much better employed, and we do not hear quite so much of prevailing distress among the workmen and their families. The output is still in excess of the demand, and prices are at the same low ebb. The house coal department is dull, and is likely to remain so. In fact, throughout the winter this branch of trade has been inactive. Patent fuel is in a little better demand.

The retirement of Mr. R. Leybourne, who has had the management of the Rhymney Works for the last ten years, is announced as about to take place. He is to be replaced by Mr. David Evans, of the Ebbw Vale Works, and the company will in him lose one of their most valuable officials.

A meeting of the Sliding Scale Committee of the South Wales Consolidation Board has been held at Cardiff, but the business transacted was of a routine character. The agreement of the men to continue working at the 5 per cent. reduction was confirmed.

The death of Mr. W. G. McMurtrie, of Llwynpia, and manager of the Glamorgan Coal Company's collieries, is announced. The deceased gentleman was well known in the Rhondda Valley, and much respected by those with whom he was brought in contact through business matters.

An action brought by the Nant-y-Glo and Blaina Ironworks Company (Limited) against Mr. Grave, one of the original directors of the company, has been successful. The case was tried in the Chancery Division, and occupied two or three days. The company desired an order of the Court that the defendant was liable to the account for 50,100 shares, which formed part of the fully paid-up shares received by the promoters of the company. It was ordered that defendant should pay 80/- per share with interest at the rate of 4 per cent. from the time he received the shares, and also pay the costs of the Court.

On a creditor's petition the Hafod Lead Mining Company has been ordered by the Chancery Division to be wound up.

The Great Western Colliery Company shareholders have met at Bristol and decided on a reconstruction scheme. The company, it will be remembered, is in liquidation, and the present directors were at this meeting appointed an advising committee to confer with the liquidators.

At a meeting of the Newport Town Council, on Tuesday, it was agreed to petition the House of Commons in favour of the Pontypridd, Caerphilly, and Newport Railway Bill, which has for its object the direct communication of the town and port of Newport with the Rhondda Valley. At Pontypridd yesterday an influential meeting of colliery proprietors and others was held, when it was resolved to strongly support this Bill. A public meeting is also to be called at Newport with the same object in view.

A case of some importance to colliers has been tried at the Pentre (Rhondda Valley) Police Court. A number of men were charged with leaving their work at the Gelly Colliery illegally. The defendants left their work in consequence of the colliery being flooded. They were offered employment in another part of the colliery but refused, and obtained employment in another colliery. It was contended that, although the Gelly Pit was flooded, the men might have brought out their tools, which was the custom on leaving one colliery for another. The case was adjourned for a week to enable the men to comply with the custom. It appeared that the company had not sustained any damage.

An explosion has occurred in the No. 2 Clynnil Pit, belonging to the Aberdare and Plymouth Company. Two youths were killed,

and two men burnt severely. Naked lights were used in the pit, and carelessness in leaving a door open seems to have caused the accident.

Persons connected with shipping are much interested in the discussion now taking place in Cardiff as to the Cefn-y-Wrach shoal. The pilots allege that at certain stages of the tide it is dangerous to take ships through an outlet from the Bute Docks to the Bristol Channel, in consequence of the shoal named. A channel has been cut through the shoal by the Bute trustees, but the pilots allege this has been silted up. The Pilotage Commissioners think otherwise, and have suspended a pilot for twelve months for refusing to take a vessel through. The shipowners and brokers, as well as the pilots, have petitioned the Board of Trade to enquire into the matter; whichever side is right, it is manifest the shipowners suffer through the neapings of their ships.

The Wayne's Merthyr and Aberdare Steam Coal and Iron Company (Limited) have at their Dylas Works, Llwydcoed, succeeded in landing a large lump of coal measuring 10 ft. by 3 ft. 9 in., and estimated to weigh about 6 tons. It is to be sent to the forthcoming International Exhibition. It was not a small matter to land such a monster, and credit is due to Mr. Pugh, the manager, and his men for the excellent manner in which they went to work. Also to Mr. L. Jolliffe, of the Lower Pit, who rendered valuable services during the last few days of the undertaking.—The Gadlys Company have also raised a large piece of coal for exhibition at Paris. It was taken to the Great Western station on trolley, drawn by six horses. Experienced judges estimate its weight at nearly 5 tons. As it lay on the trolley it measured nearly 9 ft. in length, 5 ft. in depth, and more than 3 ft. in thickness. Unfortunately it became cracked to some extent, near the centre, in transit from the upper Gadlys pit to the station.

At the Swansea Ticketing, on Tuesday, 3673 tons of copper ore were sold, realising 18,167. 1s. 6d. The particulars of the sale were—Average standard for 9 per cent. produce, 82. 3s. 5d.; average produce, 811-16ths; average price per ton, 47. 18s. 11d.; quantity of fine copper, 319 tons. The following are the particulars of the two last sales:—

Date.	Tons.	Standard.	Produce.	Per ton.	Per unit.	Ore copper.
Feb. 21.	2,637	..... £286 1 5	..... 7 1/2	..... £2 4 13 0	..... 12s. 0 d.	£60 0 0
March 19.	3,673	..... 82 3 5	..... 8 11-13	..... 4 18 11	..... 11 4 1/2	56 19 0

Compared with the last sale, the decline has been in the standard 31. 18s., and in the price per ton of ore about 6s. 9d. Messrs. Richardson report that Bett's Cova gave a produce of 6s., and sold at 11s. 4d. per unit; Seville, produce 6s., per unit 10s. 6d.; Quebrada, produce 14s., per unit 11s. 11d.; Negrillo, produce 7s., per unit 10s. 3d.; Berehaven, produce 10s., per unit 11s. 7d.; Portuguese, produce 24s., per unit 12s. 4d. There will be no sale on April 2.

At Truro Ticketing, on Thursday, 2555 tons of copper ore were sold, realising 75,722. 13s. 0d. The particulars of the sale were—Average standard, 93. 4s.; average produce, 6s.; average price per ton, 24. 19s. 6d.; quantity of fine copper, 156 tons 13 cwt. The following are the particulars:—

Date.	Tons.	Standard.	Produce.	Per ton.	Per unit.	Ore copper.
Feb. 21.	2,637	..... £97 8 0	..... 6 1/2	..... £3 3 6	..... 10s. 4 1/2 d.	£51 17 0
Mar. 7.	1,503	..... 87 5 0	..... 8	..... 4 5 0	..... 10 7	52 19 0
., 21.	2,555	..... 93 4 0	..... 6 1/2	..... 2 19 6	..... 9 8	48 7 0

Compared with the last sale, the decline has been in the standard 21. 10s., and in the price per ton of ore about 3s. 1d.

Mr. W. C. Cooper (Cooper and Co., King's Arms-yard) has been appointed liquidator of the Trades Bank, lately started in New Bridge-street.

Mr. J. S. Wilkes, many years with the Life Association of Scotland, has been appointed manager of the National Safe Deposit Company.

LIVINGSTONE CONSOLS.—It is considered by competent authorities that this admirably situated mining property will be quickly brought into a very advantageous position. There appears to be no reason why considerable quantities of mineral may not be raised, and should this be done at a shallow depth, with but little expense, the results may be easily anticipated.

DUBBY SYKE.—The vein recently discovered in this mine is fully 6 ft. wide, and mixed throughout with lead ore and soft red mineral, carbonate of barytes, &c. Teams for the work, grates, &c., for dressing ore, and other surface works are going on, and a rise is being put up in the vein to surface for ventilation. A new road has been made to within a few yards of the proposed dressing-floors, thus connecting the mine with the Middleton Teesdale Railway Station, and in the course of the present year this road will be continued and completed, so that the mine can be reached also from the Alston Station, and both roads free of cost to the Dubby Syke Company.

GROGWINION.—The sampling this month is 150 tons of lead, instead of 100 tons, as usual. The new discovery on No. 3 lode, below the bottom level, is opening out a very rich run of ore ground, superior to anything in the other parts of the mine.

SOUTH CWMYNTWITH.—The first sale of lead (40 tons) is to take place on Wednesday next.

NORTH CORNWALL.—This mine has been inspected by another agent of considerable eminence, and his report is in the highest degree satisfactory. There appears to be no doubt now that those mostly interested have ample justification for the contemplated measures, and that a dividend mine may be the result.

SAINT PATRICK.—The most favourable accounts continue to be received from this mine. The ore in the 120 cross-course, upon which the cross-cut is being driven, is steadily increasing in quantity, and there are certain indications of an east and west lode being close at hand.

LEAD MINES.—The long depression and heavy fall in the price of lead and lead ore has, no doubt, been most depressing to the shareholders in all the dividend and other mines making large returns, especially to such mines as Van, Great Laxey, Roman Gravels, Tankerville, Leadhills, Minera, &c.; but notwithstanding this deplorable state of things, shareholders should not be downhearted and sacrifice their property, simply because a temporary depression exists; and when the fact is taken into account that in 1869 (the year that the Van Mine was brought before the public) the price of metal was then only about 19s. per ton, as against 18s. now, showing a difference of 1s. per ton. The price of the ore during this period of nine years, has fluctuated between 12s. and 17s., showing a difference of 5s. per ton. There is an old adage—"When things get to their worst they generally begin to mend." Now, from all the information at our command we have every reason to anticipate and believe that a brisk demand will, ere long, spring up for lead, and consequently the price of ore must advance in a similar ratio. Then would speedily follow a material and beneficial advance in the value of all good lead mine shares, as in times past, on the termination of similar periods of depression. Undoubtedly this appears to be a most favourable time for investing in well-managed and sound lead mines.

DEPRESSION IN THE COPPER TRADE.—Messrs. Vivian, of the Hafod Copperworks, Swansea, are discharging a number of their workmen; and other firms in the Swansea district contemplate reductions of their staffs. Hitherto the depression of trade has not seriously affected Swansea.

LONDON INVESTMENT CIRCULAR.—The March number of Messrs. TALLENTIRE's Circular contains an interesting review of the Stock Exchange markets, in which the position and prospects of foreign bonds are very ably discussed. What they say of Bolivian apply equally to all. They are a risky stock to touch, but there may be profitable speculation in them under prudent guidance, if the operations are at the right moment. Nearly all other foreign bonds have been in favour lately, but the market is uncertain, and at any moment they may be a backward turn of the tide. In these circumstances wise dealers are thrown more and more upon home securities, of which there is a large choice. If we name home railway stocks first, it is not, however, because they are to be considered the most eligible; in fact, the prices of nearly all our railway stocks have been driven up to so high a level of late that the greatest carelessness and circumspection are requisite in touching them. The favour shown for the passenger lines is not without warrant, for their traffic continue to develop wonderfully, even though goods traffic in other lines fall away. In the dearth of trustworthy profitable foreign investments, it is inevitable that more attention should be directed to tramway enterprises, which are being multiplied, and afford an excellent field for the employment of capital. British mines have been very quiet, and with few ex-

ceptions quotations are nominal. Now is the time for the *bona fide* investor to look about for bargains; with a little advance in prices of metals, especially lead and tin, which is sure to come before long, a general revival in the prices of British mine shares would take place. Many properties are now selling at ridiculous low rates, when their prospects are taken into account, but great care, however, must be exercised in the selection.

QUICK DRIVING.—At the Rushen Mine, Isle of Man, in a cross-cut 6 ft. wide by 7 ft. high six men and three labourers drove by means of two Darlington rock-boring machines for week ending the 16th instant 9 yards 1 foot. The weight of stuff removed was 103 tons. All the shot holes, which varied from 42 to 48 inches deep, were electrically fired. The time occupied in charging and blasting eight cuts of ground was 10 hours.

TREATING BURNT ORES.—An improved process for the treatment and use of certain metallic residues which result when iron pyrites containing copper are submitted to a burning process in the production of sulphuric acid, has been patented by Mr. JAMES MASON, of Eynsham Hall, near Witney. It consists in, firstly, subjecting the burnt ore in its residual condition, without having been previously subjected to pulverisation or to disintegration, to the action of a solvent of the soluble salts of copper contained therein, such, for example, as water, or of water acidulated either with hydrochloric or with sulphuric acid, and after having effected the extraction of the compounds of copper, which by burning have been converted into soluble form, submitting the residues thus treated to a process of calcination, in order that the whole, or practically the whole, of the residual sulphur which may be contained in the residues may be expelled, and the residues in their undivided condition be rendered directly available for the production of iron or steel either in the blast or in any other furnace. He mentions that in practice the residues he prefers operating upon are those which result from the burning of pyrites containing on an average from about $\frac{1}{2}$ to about 2 per cent. of copper, as he has found that such residues when treated by this process give good results, but residues containing other proportions of copper may be employed.

NEW SOUTH WALES—COAL.—The export of coal from the Hunter River collieries for the three weeks ended Jan. 25, amounted to 61,254 tons, of which 13,934 tons were shipped to Sydney, 17,521 to Victoria, 7,851 to South Australia, 10,834 to New Zealand, 1,090 to Tasmania, 15,021 to Queensland, 2,214 to various colonial ports, 2,607 to China, 1,343 to Eastern ports, 390 to San Francisco, 1,619 were taken by steamers, and 2,436 were raised for home consumption.

Amidst the collateral results of mining in New South Wales and Victoria may be mentioned the remarkable fact that a considerable depth below the surface of the earth in these colonies, the relics of a flora, which has long since passed away, are being gradually brought to light. From these remains of primeval vegetation it would appear that where gum-trees and apple-trees now prevail, a very different order of trees once flourished, and that the impression which these made on the landscape was characterised by features of peculiar interest. In the appendix to the report of the mining surveyors in Victoria for 1877 a new fossil of the genus *Wilkensonia* is described. Specimens of this (*W. filiformis*) were procured at a depth of 130 ft. under basalt, at Benerves, by Mr. C. B. Wilkinson, F.G.S., and Mr. Farr; whilst in the black beds of Gulgong, at a depth of 175 feet beneath a layer of basalt, Dr. C. Barnard found similar fossils. Baron F. von Mueller, to whom the specimens were submitted for examination, is of opinion that the plant producing the remarkable fruit now existing only in a fossilised state, may have belonged to the order of *Spinaceae*. He also observes that the fossil treasures of that particular period, the Upper Pliocene, are by no means exhausted; and hence the progress of discovery in this department of science may lead to important conclusions respecting the early vegetation of Australia.

—*Sydney Morning Herald*, Jan. 31.

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£10,000 REQUIRED, in ONE or MORE SUMS, on Limited Liability, for the FURTHER DEVELOPMENT of NATIVE COPPER MINE (similar to Lake Superior) now at work, and situated in an Island in the Mediterranean. Principals or their solicitors only treated with.

Samples, plans, and reports will be placed at the disposal of *bona fide* investors by applying to CHARLES HAROURT, Esq., Solicitor, 19, King's road, Bedford-row, London, W.C.

THE ADVERTISER, having had large experience in Gold Quartz Mining, is OPEN to an ENGAGEMENT as MANAGER, or in any way to assist in the development and economical working of a mine. Has a practical knowledge of underground work and surface operations, and is competent to superintend the erection, and working of crushing and concentrating machinery. Reliable reports made on Mines.

Address, "M. E.," care of Mr. T. Jenkins, Odd Fellows' Hall, Bristol.

THE CHINA CLAY TRADE.

THE ADVERTISER, who is engaged in the Management of China Clay Works, has exceptional opportunities for the EMPLOYMENT of CAPITAL in this IMPORTANT and PROFITABLE INDUSTRY. Owing to the temporary depression in trade, there are now opportunities for investment which may not occur again for years, and handsome profits are certain.

THE RICHMOND CONSOLIDATED MINING COMPANY (LIMITED).

NOTICE TO DEBENTURE HOLDERS.

The Directors hereby give notice, that the DEBENTURES falling due and payable on the 25th March instant will be PAID at the company's bankers, the Union Bank of London, Princes street, E.C., on and after that day. The COUPONS also due and payable on the same 25th day of March will be PAID at the same time and place.

By order of the Board,
HUBERT AKERS, Secretary pro tem.

Office, 44, Coleman-street, London, E.C., March 20, 1878.

NOUVELLE MONTAGNE COMPANY, BELGIUM.

The ANNUAL GENERAL MEETING of the Shareholders will be HELD at the Hotel d'Angleterre, Liège, on SATURDAY, the 13th April next, at One o'clock P.M.

THE BRAZILIAN COMPANY (Late of No. 9, Liverpool-street, London, London, E.C.).

HOLDERS OF SHARES in this (extinct) COMPANY, their EXECUTORS or ADMINISTRATORS will BENEFIT THEMSELVES by SENDING PARTICULARS OF THEIR HOLDINGS to "W. H. C.", MINING JOURNAL Office, 25, Fleet-street, London, E.C.

Name in full
Address
Number, ; numbers, ; and amount paid upon shares
Date of last communication from directors of the company.....

LOSSIE MOUTH LEAD MINE, COUNTY OF ELGIN, N.B.

Full particulars, including copies of the reports made by the several engineers who have inspected the property, may be obtained, and samples of the ore seen, at No. 60, ST. CLEMENT'S HOUSE, CLEMENT'S LANE, LONDON, E.C.

M R. J. S. M E R R Y., ASSAYER AND ANALYTICAL CHEMIST, SWANSEA.

Mr. J. H. COLLINS, F.G.S., PUBLIC ANALYST for the County of Cornwall and Borough of Penzance, UNDERTAKES the ANALYSIS of all articles of FOOD, DRINK, DRUGS, MINERALS, MANURES, SOILS, or COMMERCIAL PRODUCTS. Also the INSPECTION of MINERAL PROPERTIES. Private Instruction given in Practical Chemistry, Mineralogy, or geology. For terms, apply by letter, 57, Lemon-street, Truro.

JOHN L. M. FRASER, BERSE COTTAGE, NEAR WREXHAM. Fourteen years at the Great Minera Mines.

MINES FAITHFULLY REPORTED ON, AND MINING ACCOUNTS CAREFULLY AUDITED.

C. H. WALKER AND CO., MINING AGENTS AND ENGINEERS, VALPARAISO AND SAN LAGO, CHILE.

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TO CAPITALISTS, INVESTORS, AND OTHERS.

THOMAS WHITE AND CO. HAVE HAD OVER TWENTY YEARS' EXPERIENCE IN SLATE QUARRYING, AND SEVEN IN MINING.

SLATE QUARRIES AND SLATE PROPERTIES INSPECTED AND FAITHFULLY REPORTED UPON.

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24, PALMERSTON BUILDINGS, BISHOPSGATE STREET, LONDON, E.C. MINING DEPARTMENT.—The Management of Mines undertaken, and Technical Reports and Surveys made.

CHEMICAL DEPARTMENT.—Ores, Minerals, Acids, Salts, Arsenic, Pigments, Dyes, &c., manufactured and dealt in.

PRINCE PATRICK LEAD MINING COMPANY, LIMITED.

The above company having passed the following Special Resolution, viz.— "That the capital of the company be increased from £18,000 to £30,000, by the issue of 12,000 preference shares of 2s. each, allowing a discount of 4s. per share, the said shares to be entitled to a preference dividend of 10 per cent."

The Directors are PREPARED TO RECEIVE APPLICATIONS for 4000 of the above SHARES, which are now offered to the public on the same terms as to the present shareholders. Payment—2s. on application, and 2s. on allotment, which with the discount allowed of 4s. per share will be equivalent to 8s. per share paid, and will entitle the holder to a preference dividend of 10 per cent. thereon.

The remaining 12s. to be called up, if required, in instalments not to exceed 2s. per share.

Forms of application for shares, and all particulars may be obtained on applying to Mr. THOMAS HUGHES (the secretary), at the Registered Offices of the Company, 59, Seel-street, Liverpool.

To secure an allotment application for shares must be sent to the office of the company or before April 4 next.

Full particulars of the General Meeting held to pass the above resolution, with a copy of the report, &c., will be found in the *Mining Journal* of March 9th.

THE ADVANCE BANK (LIMITED).

Capital £250,000, in Shares of £5 each.

OFFICES.

11, POULTRY, AND 24, QUEEN VICTORIA STREET, LONDON.

Daily Telegraph.—"Established for the purpose of making advances on the deposit of actual property."

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For Prospective and Press notice, apply to—

W. LICHFIELD, Secretary.

THE ADVANCE BANK (LIMITED).—DEPOSITS RECEIVED at ten days' call at 4 per cent.; one month's, and for longer periods at increased rates.

Current accounts opened, and interest allowed on average balance.

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CAPTAIN ABSALOM FRANCIS, MINING AGENT, ENGINEER, AND SURVEYOR, GOGINAN, ABERYSTWITH.

FOUR MINES CERTAIN FOR A RISE.

In the Court of the Vice-Warden of the Stannaries.

Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACTS, 1862 and 1867, and (LIMITED).—ALL CREDITORS or CLAIMANTS of the ABOVE-NAMED COMPANY who have not received notice from the Official Liquidator thereof that their claims have been already admitted, are hereby required to COME IN and PROVE their SEVERAL DEBTS or CLAIMS at the Registrar's Office, Truro, on Saturday, the 30th day of March instant, at Eleven o'clock in the forenoon, or in default thereof they will be EXCLUDED from the BENEFIT of any DISTRIBUTION made before such proof. And for the purpose of such proof they are to attend in person, or by their solicitors or competent agents at the time and place above mentioned.

FREDERICK MARSHALL, Registrar.

Dated Registrar's Office, Truro, the 20th day of March, 1878.

In the Court of the Vice-Warden of the Stannaries.

Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACTS, 1862 and 1867, and (LIMITED).—By direction of His Honor the Vice-Warden, Notice is hereby given that, on Thursday, the 4th day of April next, at the Registrar's Office, at Truro, in the county of Cornwall, at Eleven o'clock in the forenoon, the Court will PROCEED to MAKE a CALL OF ONE POUND PER SHARE on all the contributors settled on the List of Contributors of the above-named company as present members thereof, in respect of the shares numbered in the share register 1 to 6000.

All persons interested therein are entitled to attend at the time and place above said to offer objections to such call.

CHARLES WILLIAM CLINLON, Official Liquidator.

Dated Stannaries Court Office, March 20, 1878.

In the Court of the Vice-Warden of the Stannaries.

Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACT, 1862, and of the SOUTH GREAT WORK MINING COMPANY.—By direction of His Honor the Vice-Warden, Notice is hereby given that, on Wednesday, the 3rd day of April next, at the Registrar's Office, at Truro, in the county of Cornwall, at Eleven o'clock in the forenoon, this Court will PROCEED to MAKE a CALL of ONE POUND SIXTEEN SHILLINGS AND EIGHT PENCE PER SHARE on all the contributors of the said company settled on the List of Contributors as present members thereof.

All persons interested therein are entitled to attend at the time and place above said to offer objections to such call.

CHARLES WILLIAM CLINTON, Official Liquidator.

Dated Registrar's Office, Truro, March 21, 1878.

TO BE SOLD, pursuant to an Order of the High Court of Justice (Chancery Division), made in an action "DAVIS v. ASHWIN," with the approbation of the Vice-Chancellor HALL, by MR. JAMES STRAKER, the person appointed by the said Judge, at the Angel Hotel, at Abergavenny, in the county of Monmouth, on the 28th day of March, 1878, at Two o'clock in the afternoon, in Six Lots, certain

FREEHOLD AND LEASEHOLD ESTATES.

Situate in the parish of Llanelli, in the county of Brecon and Abergavenny, in the county of Monmouth, comprising:—

LOT 1.—THE LLANELLI LOWER FORGE AND TIN-PLATE WORKS, containing 44, OR. 20P, or thereabouts, held on lease for a term of 21 years from 24th June, 1863 (less 10 days), at a rental of £258 per annum, reduced by land and cottage rents to about £120 per annum; with the house known as Clydach-house, suitable for the manager's house, standing in its own grounds of about two acres, and held on lease for a term of seven years from 1st May, 1873 (less 10 days), at a yearly rent of £45.

LOT 2.—THE CLYDACH BAR-IRON WORKS, situate on freehold land of about 43A. 1R. 20P, together with 60 cottages or dwelling-houses thereon, producing £220 per annum, or thereabouts; and the Plant and Machinery on the works.

LOT 3.—A LIMESTONE QUARRY AND LIME WORKS, of which the quarry is held for a term of 21 years (less 10 days) from the 29th September, 1863, at £50 per annum, redeemable in royalties, and the kilns are held under the Duke of Beaufort, at two guineas per month.

LOT 4.—THE PENYFYDDLWYN FREEHOLD FARM, containing 46A. 22R. 7P, or thereabouts, on which are stables, shops, storerooms, and 90 cottages.

LOT 5.—THE MILBRAEN COLLIERY, containing 237A., or thereabouts, held on lease for 50 years (less 10 days) from 25th December, 1861, at a dead rent of £100 per annum, redeemable in royalties.

LOT 6.—THE TILLERY LEASEHOLD COLLIERIES AND GELLY CRUG FREEHOLD MINERAL ESTATE, situate in Abertillery, in the county of Monmouth. The total area comprised in the leases is 558 A., or thereabouts, part of which, known as Green Meadow, is held for a term of 45 years (less 10 days) from 21st December, 1866, at a dead rent of £600 per annum, and varying royalties; other part of which, known as gable, is held for 21 years (less 10 days) from 29th September, 1869, at a dead rent till 1879 of £150 per annum and varying royalties; other part of which, known as part of Rhw Park, is held for a term of 50 years (less 10 days) from 1st January, 1867, at a dead rent of £25 per annum, and varying royalties; other part of which, known as Blaenavon Mountain, is held for 50 years (less 10 days) from 31st December, 1861, at a dead rent of £1500 per annum, and varying royalties; and other part of which, known as Twyn-y-pentre, is held for 21 years (less 10 days) from 1st January, 1873, at a dead rent of £100 per annum. The Gelly Crug Freehold Estate comprises about 47A. 1R. 13P., part of which is let out in building sites, producing £300 per annum.

Particulars and conditions of sale may be had gratis of Messrs. TILLEARD, GODDEN, and HOLME, Solicitors, 34, Old Jewry, London, E.C.; of Messrs. WING and DU CME, Solicitors, 1, Gray's Inn Square, London, W.C.; of Messrs. GEO. DAVIS, MORGAN, and CO., Solicitors, 63, Coleman-street, London, E.C.; of Messrs. GABE and WALFORD, Solicitors, Abergavenny (at whose offices the various leases may be inspected); and of the Auctioneer, at Abergavenny, and at the place of sale.

WILLIAM BINNS SMITH, Chief Clerk.

Dated this 1st day of March, 1878.

VALUABLE MINING MACHINERY AND MATERIALS AT DING DONG MINE, NEAR PENZANCE, CORNWALL, FOR SALE.

M R. A. BERRYMAN has been instructed to OFFER FOR SALE, BY AUCTION, on the Mine, on Tuesday, the 26th March, 1878, at Eleven o'clock in the forenoon, the whole of the

MACHINERY AND MATERIALS

In separate lots, consisting of—

ONE 40 in. PUMPING ENGINE, 9 ft. stroke, with TWO 9 tons BOILERS and FITTINGS.

ONE 30 in. PUMPING ENGINE, 6 ft. stroke, with ONE 9 tons BOILER and FITTINGS.

ONE 25 in. WINDING ENGINE, double acting, 5 ft. stroke, with ONE 5 tons BOILER and whim cage.

ONE 18 in. WINDING ENGINE, double acting, 5 ft. stroke, with ONE 5 tons BOILER and whim cage.

ONE 24 in. STAMPING ENGINE, with TWO 9 tons BOILERS, fly wheels, three stamp axles for 40 heads, with heads, lifters, &c., complete.

PUMPS: 50 fms. 12 in., 28 fms. 9 in., 30 fms. 8 in., 31 fms. 7½ in., 36 fms. 7 in., 138 fms. 6 in., 30 fms. 5 in., and 20 fms. 4 in.

Ten plunger poles from 5 to 12 in., with H and top door pieces, pole cases, &c.; six balance bobs, two angle ditto; 250 fms. main rods, 10 to 6 in., with strapping plates, and rod pins of same; 180 fms. 2½ in., 170 fms. 2 in., 160 fms. 1½ in. round iron rods; five shaft tackles, with sheaves from 10 to 12 ft. diameter, with plummer blocks and brasses of same; two capstans; three shears, with sheaves, plumb blocks, and brasses; 800 fms. bridge railway iron; 600 fms. of flat ditto; 200 fms. ½ in. chain; a large quantity of steel and iron wire rope; six iron skips; eight tram wagons; 205 sheaves of various sizes; 680 fms. 5 in. skip road runners; 130 fms. wood launders; 300 fms. iron stave ladders; 12 pulley and other stands; four crab winches; five pairs double and treble blocks; four pairs yokes; 2 ton flange bolts; a large quantity of bucket prongs, brass forms, rings, staples, and glands; several centre head round bubbles, with gear and stands, complete; one iron kieve, eight wood ditto; hand and other frames; working tools on stamp floors; a large quantity of useful timber; three smiths' bellows, three anvils, one mandrill; two iron horses; two punching machines; two beams, scales, and weights; smiths' tools; screwing stocks; crane; turning lathe; plates and taps; wrenches; cast steel; six ovens; mallets, hammers, &c.

Also, a large quantity of old brass, iron, and timber.

For further particulars, apply to Mr. R. WELLINGTON, Chydour, Penzance; Capt. WILLIAMS, on the Mine; or the Auctioneer, 23, Clarence-street, Penzance.

Dated 9th March, 1878.

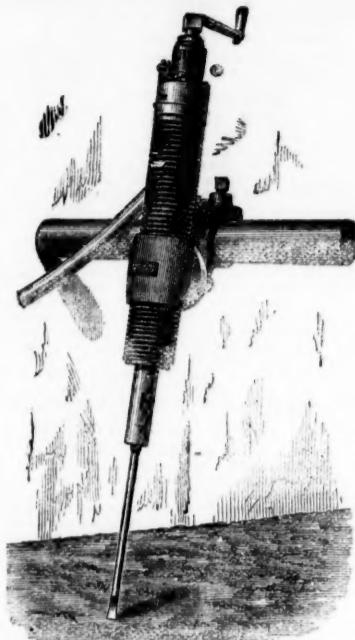
WEST MARIA AND FORTESQUE CONSOLS.

M ESSRS. SKEWIS AND SON are instructed to SELL, AT AUCTION, on Thursday, the 28th March, 1878, at half-past Two o'clock in the afternoon, in

"DARLINGTON" ROCK BORER.

NO VALVE.

SCREW, OR CRADLE MOUNTED, BORING MACHINES.



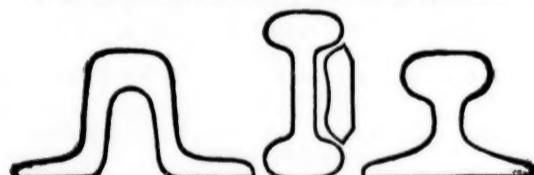
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SUITABLE FOR PIT BANKS, ENGINE HOUSES, &c., &c.
Each Lamp gives a light equal to
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RAILS FOR SALE.Bridge Section, 10 to 25 lbs. per yard.
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NEW PERFECT, NEW DEFECTIVE, AND SECONDHAND IN
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For sections and price, apply to—**ROBERT WRIGHTSON**
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IRON AND STEEL RAILS, of all sections, from 10 to 82 lbs. per
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POINTS AND CROSSINGS, FISH PLATES, BOLTS, NUTS, CHAIRS,
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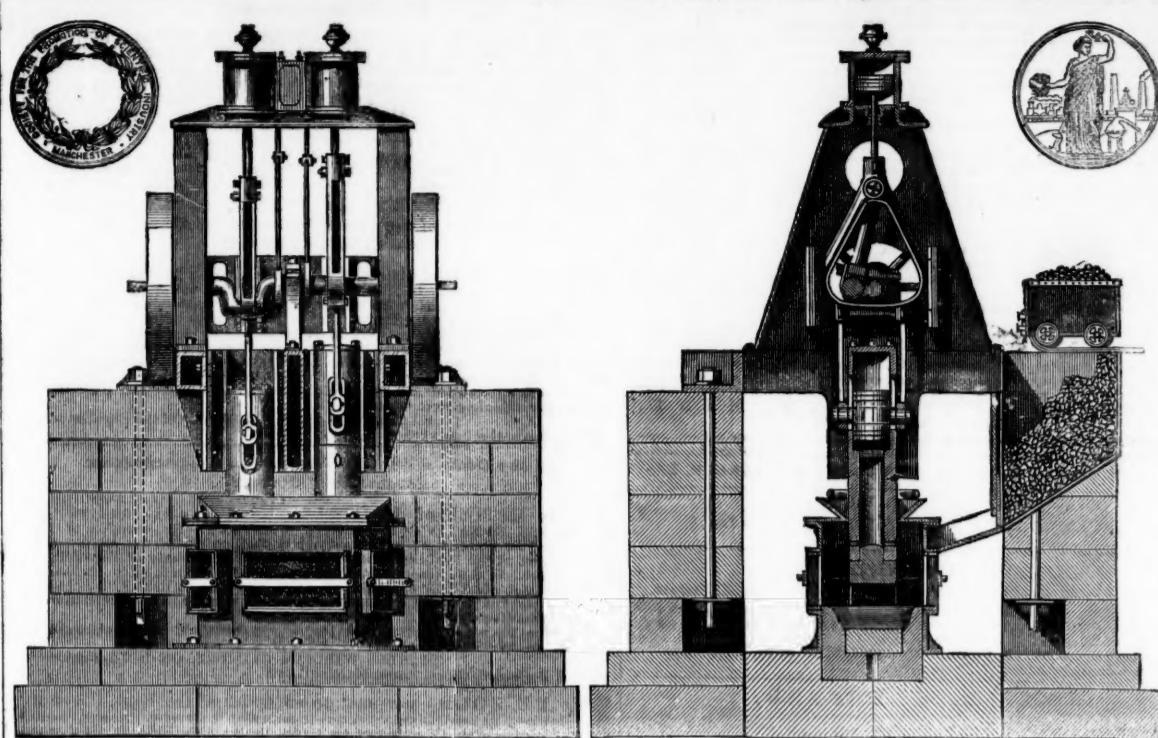
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All objectionable features of "wear and tear" common to the original and existing Pneumatic Stamps (driven by belts) are removed in this patent, and leather glands and stuffing boxes entirely dispensed with, the pneumatic piston being reciprocated into the compressing chambers by direct-action from without. These double machines are guaranteed to be of the capacity of 36 ordinary heads of cam and lifter stamps, and engineers will at once see that, inasmuch as the power is directly applied to its work (without the medium of belts and other gearing), the minimum consumption of coal (all other conditions being equal) must be the result.

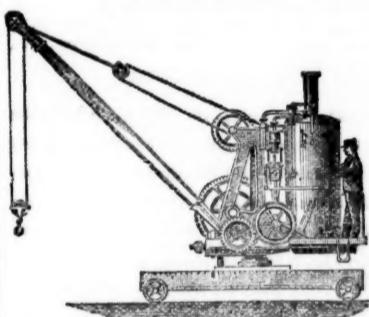
The COST OF THESE MACHINES (including boiler) is about ONE-THIRD OF THE ORIGINAL CAM AND LIFTER STAMPS, to do the same work.

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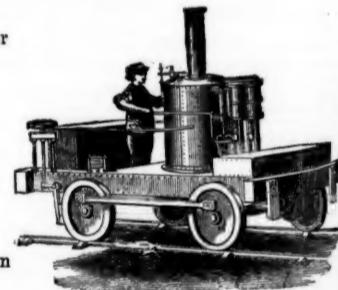
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LOCOMOTIVES,
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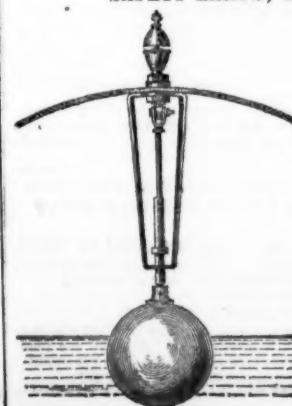
EXPLOSIONS FROM STEAM BOILERS have become so frequent, and are often attended with such serious results both to life and property, that any improvement tending to secure their safety cannot fail to be appreciated. From numerous examinations, made after explosions, by practical engineers, the great majority of accidents that occur are considered the result of a deficiency of water in the boilers. Experience has proved that it is good policy to furnish each boiler with this Self-acting Alarm, so constructed that, upon the water getting below a certain level, nothing can prevent the opening for the steam to act directly upon the instrument and cause the alarm.

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A loose pin at the top of the whistle enables anyone to test the alarm at a moment's notice.

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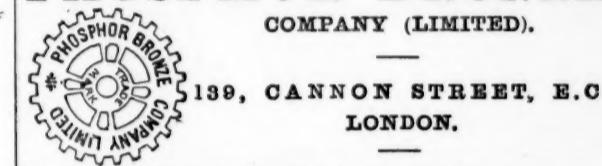
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Shares	Mines.	Paid.	Last wk.	Clos. pr.	Total divs.	Per sh.	Last sd.
1500 Alderley Edge, c, Cheshire*	10 0 0	—	—	—	12 11 2	0 6	Jan. 1876
4000 Brookwood, c, Buckfastleigh	1 16 0	—	1	—	3 16 0	0 2	Nov. 1875
2000 Bryn Alyn,* t, Denbigh	10 0 0	—	—	—	0 7 0	0 7	Jan. 1877
4400 Cashwell, t, Cumberland*	2 10 0	—	2 2 1	—	1 9 6	0 2	Aug. 1876
1900 Carn Brea, c, t, Illogan†	36 7 6	—	45	42 45	308 0 0	1 0 0	Feb. 1874
2150 Cook's Kitchen, t, Illogan†	24 4 9	—	3	2 2 3	11 17 0	0 7 6	Jan. 1873
19240 Devon Gt. Consols, c, Tavistock*	1 0 0	—	3 1 4	—	116 15 0	0 8 0	July 1877
4298 Dolvenath, c, t, Camborne	10 14 10	—	33	31 33	112 6 3	0 5 0	Mar. 1878
8000 East Black Craig, t, Scotland	5 0 0	—	—	—	0 10 0	0 10 0	Feb. 1877
300 East Darren, t, Cardiganshire	32 0 0	—	—	—	235 10 0	1 0 0	Aug. 1876
6100 East Pool, t, Illogan	0 9 9	9	8 6 9	—	15 6 9	0 2 0	Feb. 1878
40 000 Glasgow Carr., c* (30,000 £1 p., 10,000 15% p.)	13 6 0	—	13 6 15	—	0 13 4	0 6 0	Feb. 1878
7500 Gorsedd and Merlin Cons., Flint	2 10 0	—	5	4 6 5	0 5 0	0 5 0	Aug. 1877
15000 Great Dylife, t, Montgomery	4 0 0	—	3	2 3	0 2 6	0 2 6	Apr. 1876
15000 Great Laxey, t, Isle of Man	3 0 0	—	21 1 10% 20 1	—	23 3 0	0 10 0	Jan. 1878
615 Gt. Retallack, t, b, Perranzabuloe	5 18 6	—	—	—	0 1 6	0 1 6	May 1876
6400 Green Hurth, t, Durham	0 0 0	—	3	1 1 1	1 18 0	0 3 0	Mar. 1878
20000 Grogwinion, t, Cardigan*	2 0 0	—	4 3 4	—	0 14 0	0 2 0	Jan. 1878
9830 Gunnislake (Clitters), t, s	5 5 0	—	2 2 2	—	0 13 9	0 1 0	Oct. 1876
50000 Holm bush, a, c, s-l, Callington*	1 0 0	—	1 1 1	—	0 4 6	0 0 0	Sept. 1877
2500 Isle of Man, t, Isle of Man†	25 0 0	—	—	—	82 8 0	0 10 0	Feb. 1876
2000 Leadhills, t, Lanarkshire	6 0 0	—	4	3 4	0 12 0	0 6 0	Oct. 1877
400 Lisburne, t, Cardiganshire	18 15 0	—	5	65 75	585 10 0	1 0 0	Feb. 1878
14000 Llanidloes, t, Montgomery	3 0 0	—	1 1 1	—	0 9 0	0 4 6	Nov. 1876
9000 Marke Valley, c, Linkinhorne	5 3 6	—	3 1 1	—	7 15 0	0 2 0	Jan. 1876
16030 Mellanear Copper, Hayle*	2 0 0	—	3 3 4	—	0 2 0	0 2 0	Jan. 1878
30000 Minera Mining Co., t, Wrexham*	5 0 0	—	12	10 12	67 10 8	0 2 6	Feb. 1878
20000 Mining Co. of Ireland, c, e, l*	7 0 0	—	—	—	23 17 8	0 2 6	Jan. 1878
444 North Busy, c, Chacewater	3 9 6	—	5	4 5	1 10 0	1 0 0	July 1877
16289 North Hendre, t, Wales	2 10 0	—	—	—	1 12 8	0 2 6	Aug. 1878
30000 Panty Mwyn*, t, Mold (79/4 iss.)	2 0 0	—	3	2 1 3	0 1 0	0 1 0	Feb. 1878
6000 Pedu an-dres Con., t, Redruth	0 8 6	—	6 1/2	6 1/2	0 9 0	0 9 0	June 1878
8000 Penhals, t, St. Agnes	3 2 6	—	1	3 1	3 18 6	0 2 0	July 1875
6000 Pennant, t, bar, North Wales*	5 0 0	—	5	4 5	0 5 0	0 5 0	Mar. 1877
45793 Penstrithal, t, c, Gwennap	2 0 0	—	6s.	48. 0s.	0 2 8	0 8 0	Nov. 1875
18000 Prince Patrick, s-l, Holywell	1 0 0	—	2 1/2	1 1/2	0 14 0	0 1 3	Jan. 1876
10000 Red Rock, * t, Cardigan	2 0 0	—	2 1/2	2 1/2	0 4 0	0 2 0	Jan. 1878
12000 Roman Gravels, t, Salop	7 10 0	—	8 8 4	8 8 4	7 10 0	8 6 0	May 1877
612 South Cadron, c, St. Cleer	1 5 0	—	90	80 85	742 10 0	1 0 0	Mar. 1878
6123 South Condurrow, t, c, Camborne	6 5 6	—	10 1/2	11 11 1/2	3 5 0	0 7 0	Jan. 1878
12000 St. Harmon, t, Montgomery	3 0 0	—	3	2 4	0 6 0	0 3 0	July 1877
11000 So. Pr. Patrick, * t, (8000 sh. issued)	1 0 0	—	—	—	0 7 0	0 1 0	Oct. 1875
12000 Tawkerly, t, Salop	6 0 0	—	3 1/2	3 1/2	4 17 0	0 5 0	Dec. 1876
6000 Tincroft, c, t, Pool, Illogan	9 0 0	—	12	10 12	50 8 6	0 5 0	May 1877
15000 Van, t, Llanidloes	4 5 0	—	27	24 26	22 15 6	0 12 0	Jan. 1878

FOREIGN DIVIDEND MINES.

Shares	Mines.	Paid.	Last Pr.	Clos. Pr.	Last Call.
5530 Alamillos, t, Spain†	2 0 0	—	2	1 1/2	1 18 3
80000 Almada and Trito Consol., t*	1 0 0	—	3 1/2	3 1/2	0 1 0
20000 Australian, c, South Australian	7 7 6	—	2	1 1/2	0 1 0
10000 Battle Mountain, * c, (8240 part pd.)	5 0 0	—	—	—	0 10 0
15000 Birdseye Creek, g, California*	4 0 0	—	1	3 1	0 14 0
20000 Caps Copper Mining, * So. Africa	7 0 0	—	3 1/2	3 1/2	0 17 6
34432 Cedar Creek, g, California*	5 0 0	—	3 1/2	3 1/2	0 1 0
85000 Cesena Sul, Co., Romagna, Italy*	10 0 0	—	4	3 1/2	0 10 0
15000 Chicago, c, Utah	10 0 0	—	1 1/2	1 1/2	2 8 0
65000 Colorado United, * t, Colorado*	8 0 0	—	1 1/2	1 1/2	0 18 6
10000 Copiapo, c, Chile* (220 shares)	18 15 0	—	—	—	7 11 5
00000 Don Pedro North of the * t	0 18 0	—	3 1/2	3 1/2	0 2 0
23500 Eberhardt & Aurora, s, Negada†	10 0 0	—	6 6 6	1 8 0	3 0 0
70000 English & Australian, c, S. Aust.	2 10 0	—	1 1/2	1 1/2	2 15 9
2048 Flagstaff, t, Utah	10 0 0	—	3 1/2	3 1/2	4 2 0
25000 Fortuna, t, Spain†	2 0 0	—	5 1/2	5 1/2	6 14 10
55000 Frontino & Bolivia, g, New Granada*	2 0 0	—	2 1/2	2 1/2	0 1 0
30000 Gold Run, * t, yd.	1 0 0	—	—	—	0 2 4
88000 Kapunda Mining Co., Australia†	1 3 0	—	—	—	0 2 4
20000 Last Chance, s, Utah	5 0 0	—	7 1/2	7 1/2	0 14 0
15000 Linares, t, Spain†	3 0 0	—	6 1/2	6 1/2	17 3 10
65000 London and California, g*	2 0 0	—	3 1/2	3 1/2	0 1 0
7837 Lusitanian, Portugal† (25 sh.)	8 10 0	—	—	—	1 11 8
5000 Mamm. Copperopolis of Utah, c, t	10 0 0	—	—	—	0 5 0
5000 Mountain Chief, t, Utah	10 0 0	—	—	—	0 4 0
12000 Pontigibald, s-l, France†	20 0 0	—	28	28 30	25 8 0
00000 Port Phillip, g, Clunes†	1 0 0	—	3 1/2	3 1/2	1 11 0
54000 Richmond Consols, s, Nevada*	5 0 0	—	—	—	Nov. 1876
40000 Santa Barbara, g, Brazil	0 10 0	—	1 1/2	1 1/2	0 3 9
120000 Scottish Australian Mining Co., t	1 0 0	—	1 1/2	1 1/2	15 per cent.
80000 Scottish Austral. Mining Co., New	10 0 0	—	7 1/2	7 1/2	15 per cent.
123500 Sierra Buttes, g, California*	2 0 0	—	1 1/2	1 1/2	1 18 0
60000 South Aurora, s, Nevada*	5 0 0	—	3 1/2	3 1/2	0 14 2
223000 St. John del Rey† (25 stock & multiples dealt in)	318 325	—	—	—	34 years 20 p. cent. for Dec. 1876
20000 Tolima, g, So. America	5 0 0	—	—	—	0 11 6
25000 Victoria (London), g, Australia	1 0 0	—	3 1/2	3 1/2	0 6 6
15000 Western Andes, t, New Granada	5 0 0	—	—	—	0 12 0
91000 W. Prussian (5500 pref. sh. 10% pd.)	10 0 0	—	11 1/2	11 1/2	1 8 0

NON-DIVIDEND FOREIGN MINES.

Shares	Mines.	Paid.	Last Pr.	Clos. Pr.	Last Call.
5000 Anguilla Phosphate, West Indies (4000 issued)	10 0 0	—	—	—	... Fully pd.
12000 Argentine, g, Argentine Republic	5 0 0	—	—	—	... Fully pd.
3000 Bellavista, s, Peru* (120 shares)	10 0 0</td				